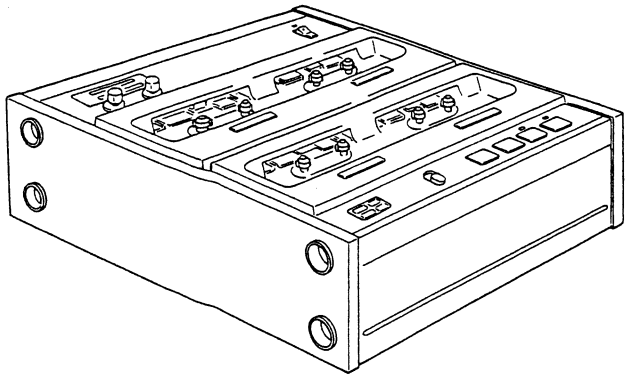
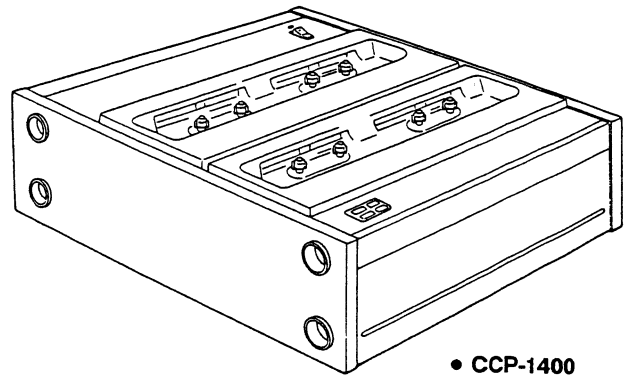
CCP-1300/1400

U Model



• CCP-1300



• CCP-1400

AUDIO CASSETTE DUPLICATOR

SPECIFICATIONS

Power requirements	120 V AC, 60 Hz
Power consumption	0.6 A
Recording system	2-track 2-channel /2-track 1-channel
Tape cassette	Normal TYPE I cassette (C-30, C-46, C-60, C-90) (TYPE II and TYPE IV tapes not usable)
Tape speed	76 cm/s (30 ips)
Copy time	Approx. 2 min. (with C-60 cassette) (per run)
Rewind time	Approx. 45 sec. (with C-60 cassette)
Frequency response	50-10,000Hz
Recording bias frequency	Approx. 550 kHz
S/N	52 dB, Peak level recording (NAB-A, WRMS)
Total harmonic distortion	Within 3%
Wow and flutter	Less than 0.23% (WRMS)
Crosstalk	Better than 52 dB (between track 1 and 2, at 1 kHz)
Drive control connector	CCP-1300: Output (13-pin DIN) CCP-1400: Input (13-pin DIN), Output (13-pin DIN)
Dimensions	Approx. 328 × 160 × 382mm (w/h/d) (13 × 6 3/8 × 15 1/8 inches) not including projecting parts and controls
Weight	Approx. 9.8kg (21 lb 10 oz)
Accessories supplied	AC power cord (1) Head cleaning tip (1 set) Dust cover (1) Control cable with 13-pin DIN connectors (1, supplied with the CCP-1400 only) Operating Instructions

Design and specifications subject to change without notice.

SONY®

SERVICE MANUAL

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SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1
OPERATION

1-1. FEATURES

CCP-1300 Audio Cassette Duplicator

- High speed cassette duplication at 16 times normal speed.
- Side selector to select one-side duplication or both-side duplication.
- Auto-copy function to activate a series of tape operation automatically at the press of a button.
- Short tape indicator to show that duplication may be uncompleted due to a short copy tape and that a check is required.
- Control output terminal for connecting an additional audio cassette duplicator with copy section only.
- Playback volume controls with level meters for each channel of the original tape.
- Two-reel motor direct drive system per each position.
- End beep when duplication is finished.
- The static suppression brush for preventing electrostatic noise.
- Up to 5 CCP-1400s can be connected to CCP-1300.

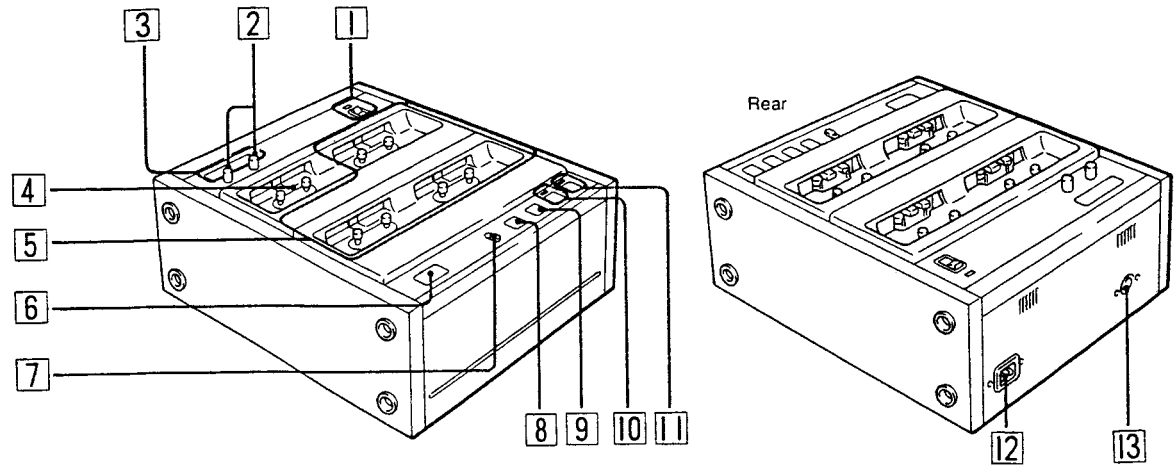
CCP-1400 Audio Cassette Duplicator

When connected to CCP-1300:

- High speed duplication onto 4 copy cassettes at 16 times normal speed.
- Tape operation fully controlled by the connected CCP-1300.

1-2. LOCATION AND FUNCTION OF CONTROLS

CCP-1300



1 **POWER switch and indicator**
Turn the switch ON and the indicator lights up. The SHORT TAPE indicators also light up. After four seconds of warming up, the SHORT TAPE indicators will go off and the unit will be ready to operate.

2 **Playback level controls**
The knobs A and B control the playback sound level of the cassette side A and B respectively.

3 **Level meters**
The meters A and B indicate the playback level of the cassette side A and B respectively.

4 **ORIGINAL cassette compartment**

5 **COPY cassette compartments 1, 2 and 3**

6 **SHORT TAPE indicators**
Lights when the corresponding copy tape reaches the end before the original tape is completely duplicated. (Refer to "SHORT TAPE Indicator" on page 8.)
Also lights when there is no tape in the corresponding cassette compartment. The indicators go off when any button but STOP is pressed.

7 **SIDE SELECT switch**
Selects one side or both sides of the cassette per duplication run.
A : for one side duplication.
A + B : for both sides duplication.

8 **REWIND button**
Press to rewind the tape(s). Each tape stops automatically at the beginning. The tapes in all connected CCP-1400 duplicators will also be rewound.

9 **STOP button**
Press to stop the tape(s). The tapes in all connected CCP-1400 duplicators will also stop.

10 **COPY button and indicator**
Press to duplicate the tapes. The indicator lights and playback of the original tape and recording on the copy tape start immediately. Recording also starts in all connected CCP-1400 duplicators. When duplication is finished, all the tapes stop. The indicator goes off and the end beep sounds.

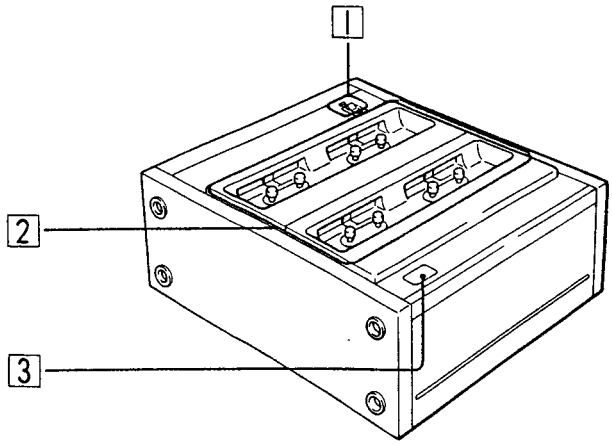
11 **AUTO COPY button and indicator**
Press to rewind and then duplicate the tapes. The indicator lights and all the tapes are rewound to the beginning. When all the tapes have been rewound, the AUTO COPY and COPY indicators light and then playback of the original tape and recording on the copy tapes start. Recording also starts in the connected CCP-1400 duplicators. When duplication is finished and all the tapes come to the end, the COPY indicator goes off. With the AUTO COPY indicator still lit, all the tapes, except the tape with its SHORT TAPE indicator lit, start to rewind. When all the tapes are rewound to the beginning, the AUTO COPY indicator will go off and the end beep will sound.

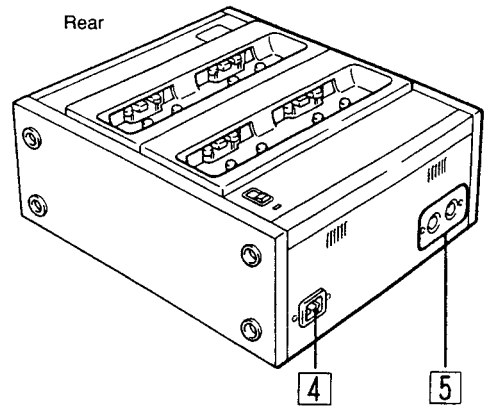
Rear

12 **AC IN socket**
Connect the supplied AC power cord.

13 **LINE/CONTROL OUTPUT connector (13-pin DIN)**
Supplies the track signal of the original tape and the driving signal to additional duplicators. Connect to the LINE/CONTROL INPUT connector of CCP-1400.

CCP-1400





1 **POWER switch and indicator**
Turn the switch ON and the indicator lights. The SHORT TAPE indicators also light. After four-second warming up the SHORT TAPE indicators will go off and the unit will be ready to operate.

2 **COPY cassette compartments 1, 2, 3 and 4**

3 **SHORT TAPE indicators**
Lights when the corresponding copy tape reaches the end before the original tape is completely duplicated. (Refer to "SHORT TAPE Indicator" on page 8.)
Also lights when there is no tape in the corresponding cassette compartment.
The indicators go off when any button but STOP of CCP-1300 is pressed.

Rear

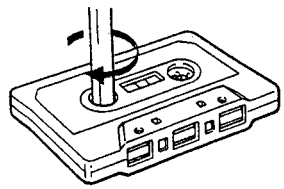
4 **AC IN socket**
Connect the supplied AC power cord.

5 **LINE/CONTROL connectors (13-pin DIN)**
INPUT: Accepts the track signal of the original tape and the driving signal from CCP-1300. Connect to the LINE/CONTROL OUTPUT connector of CCP-1300.
OUTPUT: Supplies the track signal of the original tape and the driving signal to an additional duplicator. Connect to the LINE/CONTROL INPUT connector of the additional CCP-1400.

1-3. PREPARATION

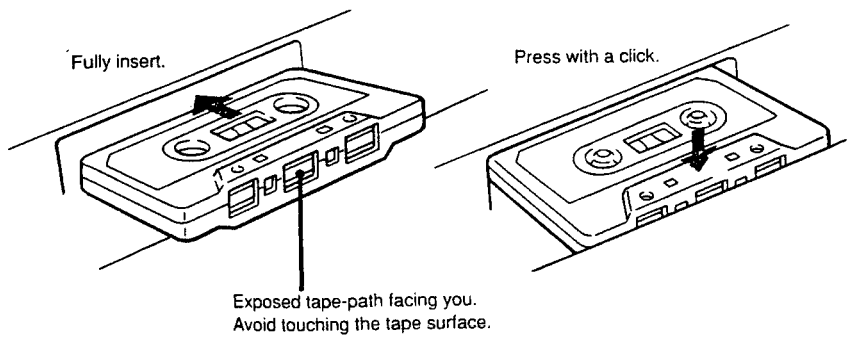
Cassette Insertion

1 Before inserting a cassette, take up any slack in the tape.

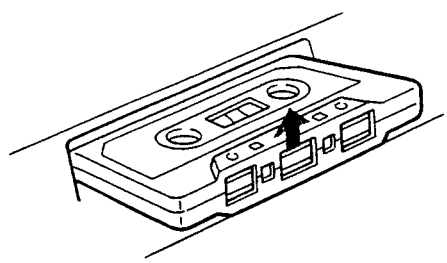


2 Check the cassette sides.
For both-side duplication: To duplicate the content of the original cassette side A onto the side A of the copy cassette, install the cassettes with the same side up.
For one-side duplication: Insert the original and copy cassettes with the required side up.

Notes on cassettes
- Use normal TYPE I cassettes.
- It is advisable to use cassettes of the same brand, as, even if the cassettes have the same rated duration, they may differ a little in length, depending on the manufacturers. This prevents incomplete duplication.
- Use of a 120-minute cassette tape is not recommended. Frequent switching of the tape operation mode can result in the tape becoming tangled because the tape is very thin and can easily be stretched.
- Remember that duplication can be made, even though the copy cassette has had the safety tabs for preventing accidental erasure removed.
- The recording of an original cassette will deteriorate by several decibels at 10 kHz after it has been duplicated 100 times. If it should be duplicated more than 100 times, prepare extra original cassettes.

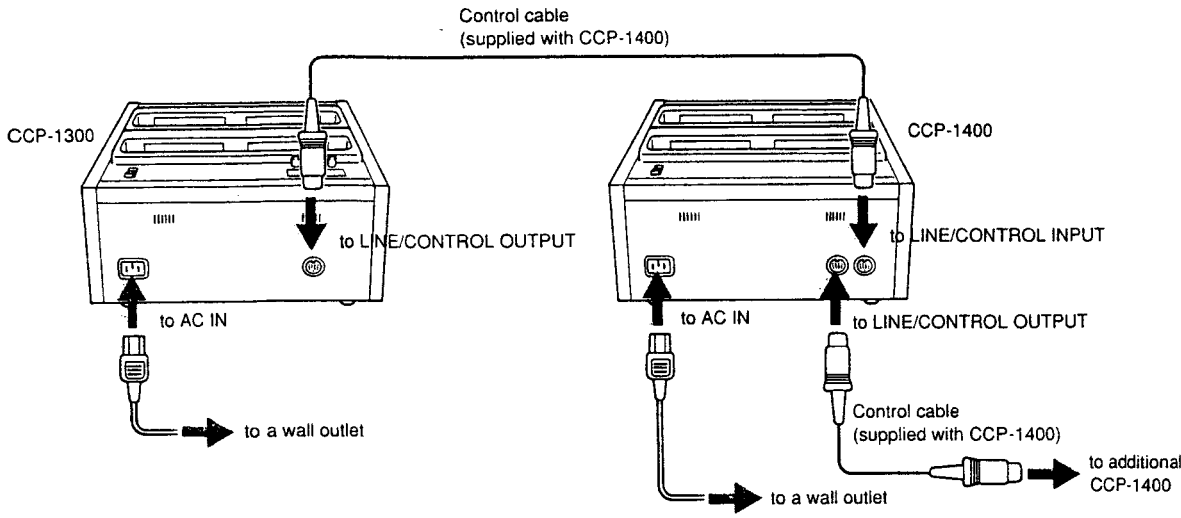


To remove
First lift off the tape-path side and then remove the cassette.



Connection

Connect the LINE/CONTROL OUTPUT connector and the LINE/CONTROL INPUT connector.

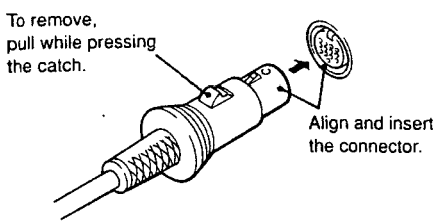


Notes

- You can connect up to 5 CCP-1400s in series.
- Before making connections, be sure to turn off the power.

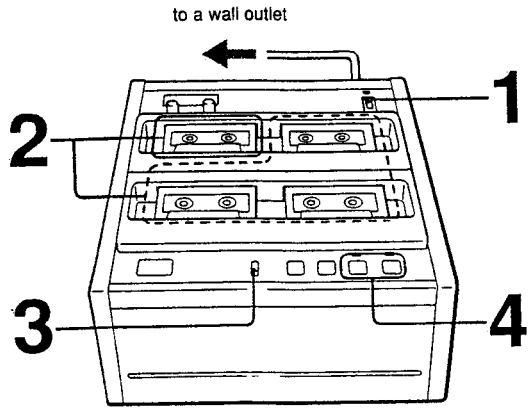
Control cable

Connect the LINE/CONTROL OUTPUT connector and the LINE/CONTROL INPUT connector.

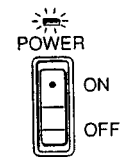


1-4. DUPLICATION

Five-minute warming up is recommended befor starting the unit. During warming up, you can clean the heads (see page 34).



1 Set the POWER switch to ON.
The indicator lights up.
Allow 4 seconds for warming up.



To rewind the tape(s) independently, insert only the cassette(s) to be rewound and then press the REWIND button. Each tape will be rewound to the beginning and will stop.

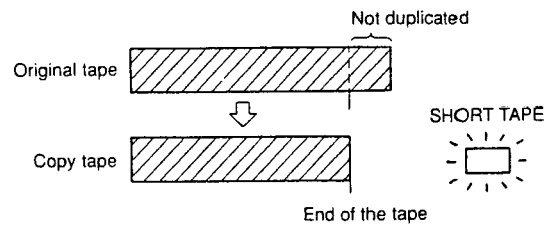
To stop the tapes, press the STOP button.

Adjust the playback level controls by watching the level meters.
Normally set them to the center position.

To use the additional CCP-1400 duplicator
Turn ON the POWER switch of the CCP-1400 and insert copy cassettes. By operating the master duplicator, duplication will begin on the additional duplicator simultaneously.

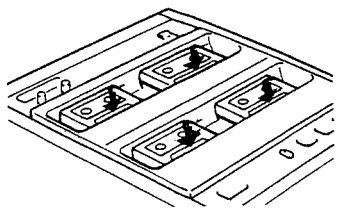
SHORT TAPE Indicator

The SHORT TAPE indicator lights to show that a copy tape was so short that the duplication may not have been made completely and that a check is required. When a copy tape reaches the end before the end of the original tape, it stops but the original tape continues running. The corresponding SHORT TAPE indicator will light. The SHORT TAPE indicator will go off by pressing any button but STOP.

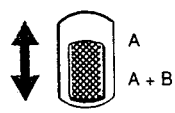


Note
When a copy tape reached the end just a moment after the end of the original tape, the SHORT TAPE indicator may light even if duplication is complete. To confirm duplication use a cassette recorder to play back near the end of the copy tape. The indicator also lights when there is no tape in the cassette compartment.

2 Insert the original cassette and the copy cassette(s).

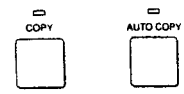


3 Select the cassette side to be duplicated.
A: for one side of the cassette.
A + B: for both sides of the cassette.



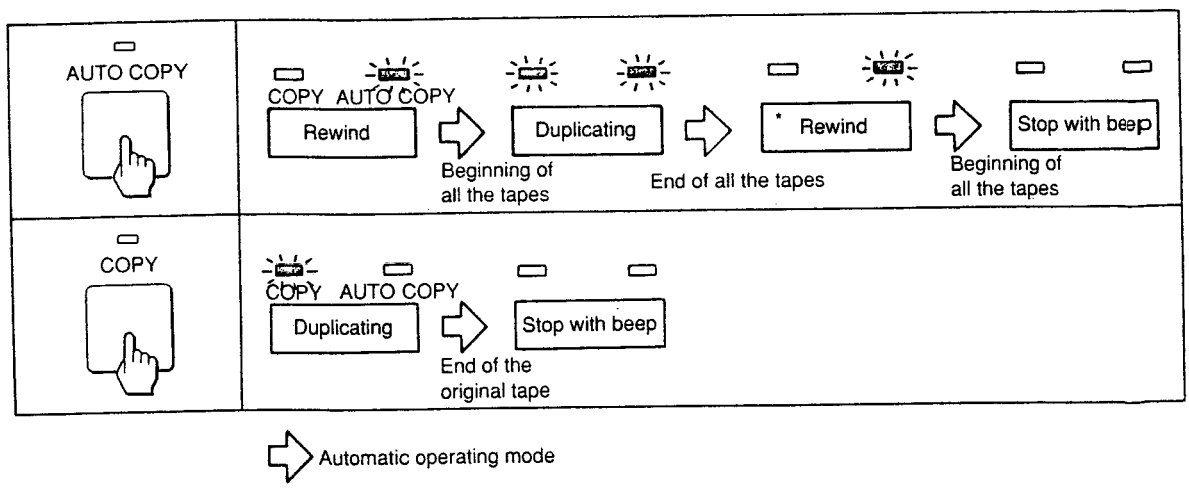
4 Press the AUTO COPY button or COPY button.
AUTO COPY: To rewind each tape, start duplicating and rewind to the beginning again.

COPY: To start duplicating immediately without rewinding.



See the table below.

When the AUTO COPY or COPY button is pressed, the operation of the original and copy tapes is controlled as in the following table.



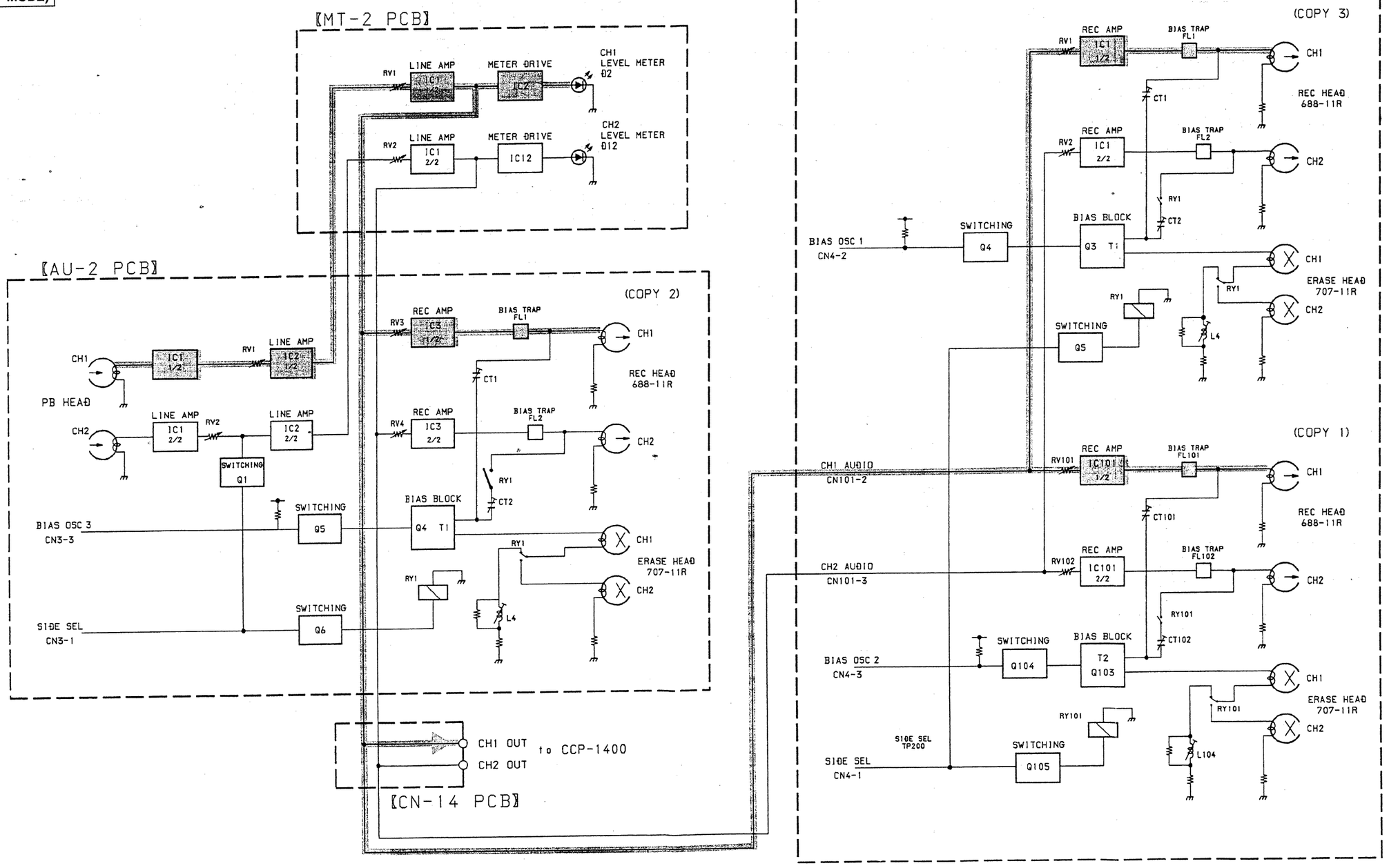
* If the SHORT TAPE indicator is lit, the corresponding tape is not rewound.

MEMO

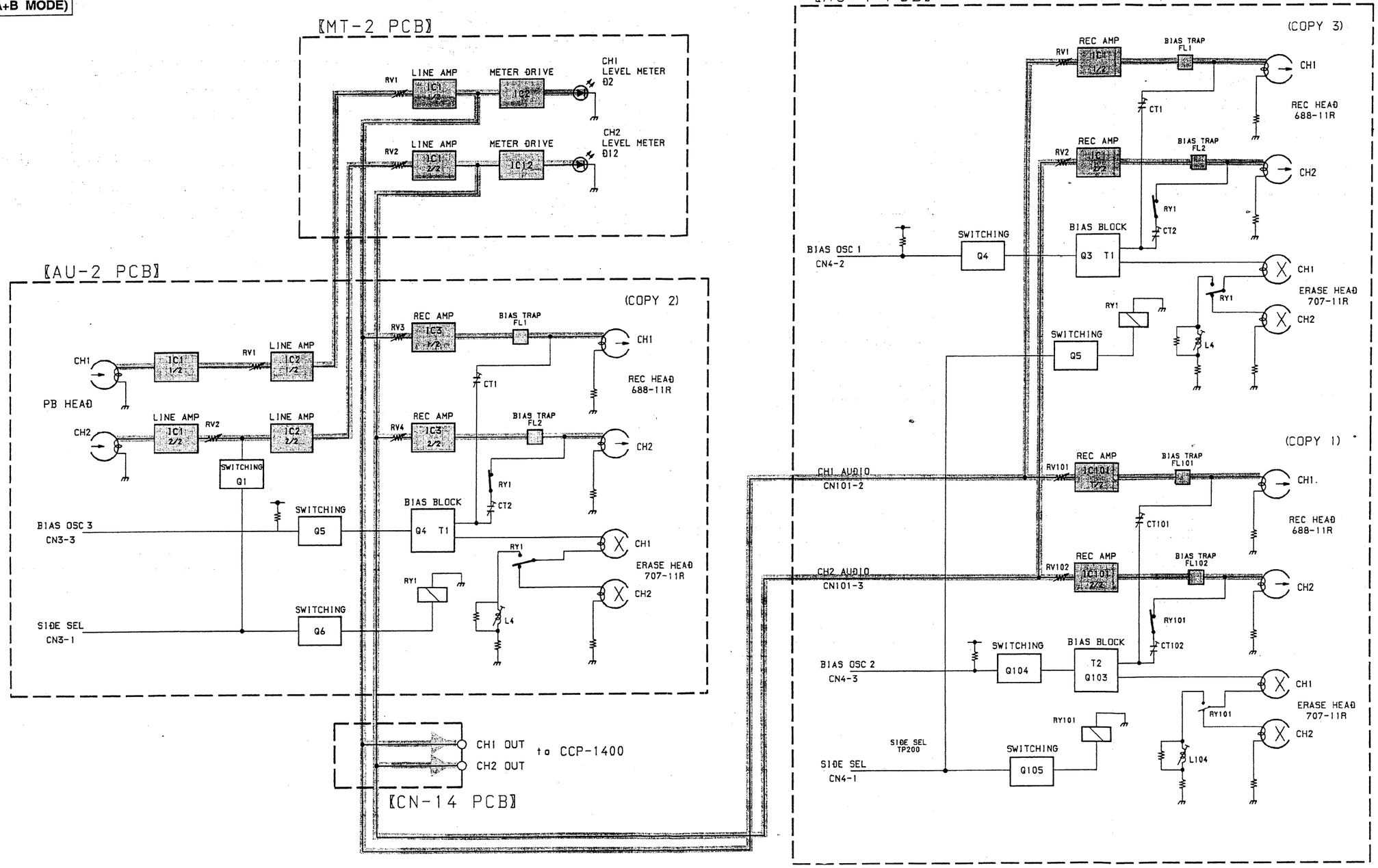
SECTION 2
CIRCUIT DESCRIPTION

2-1. OPERATION STATE

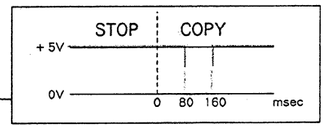
CCP-1300 AUDIO (COPY A MODE)



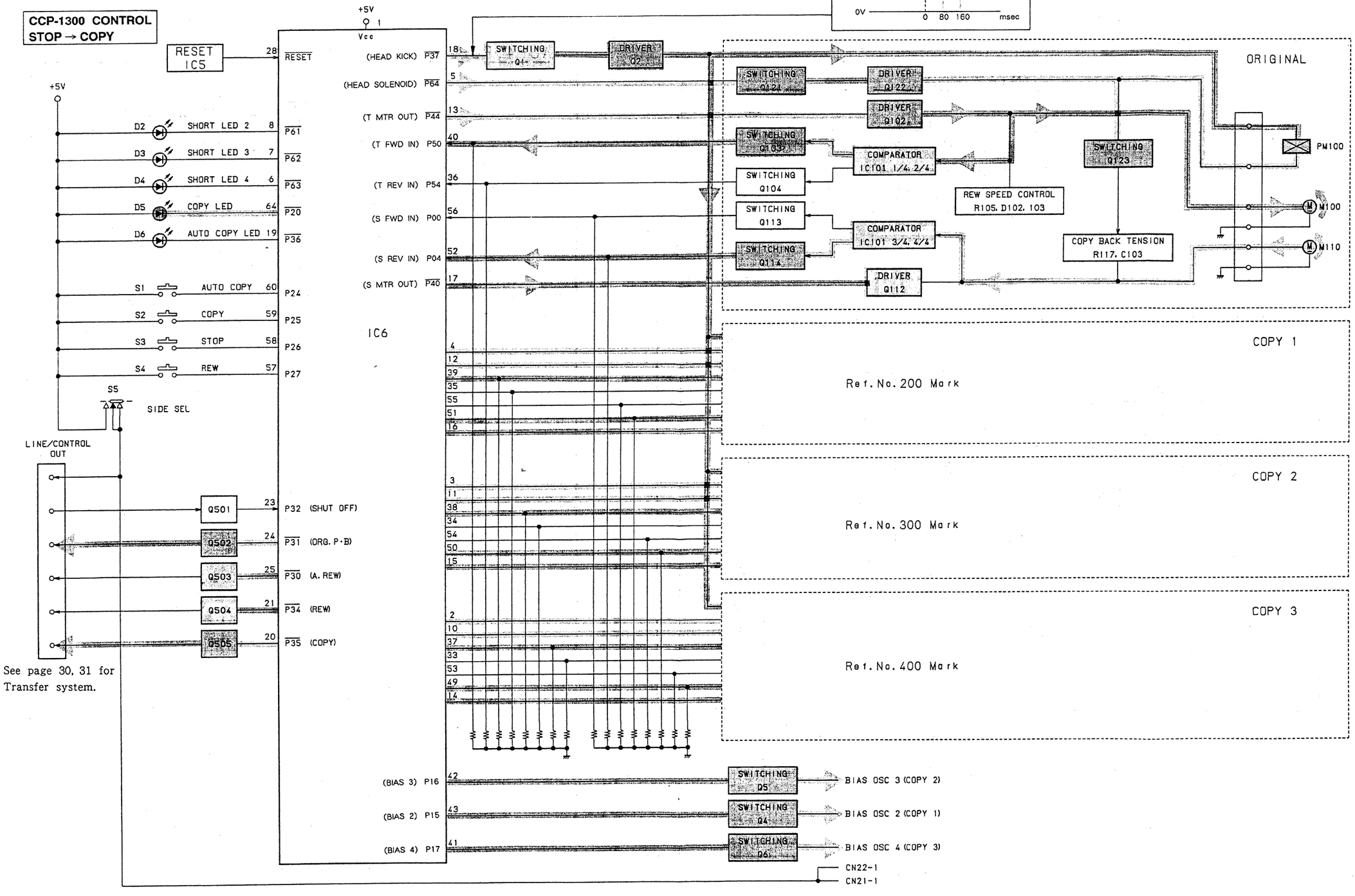
CCP-1300 AUDIO (COPY A+B MODE)



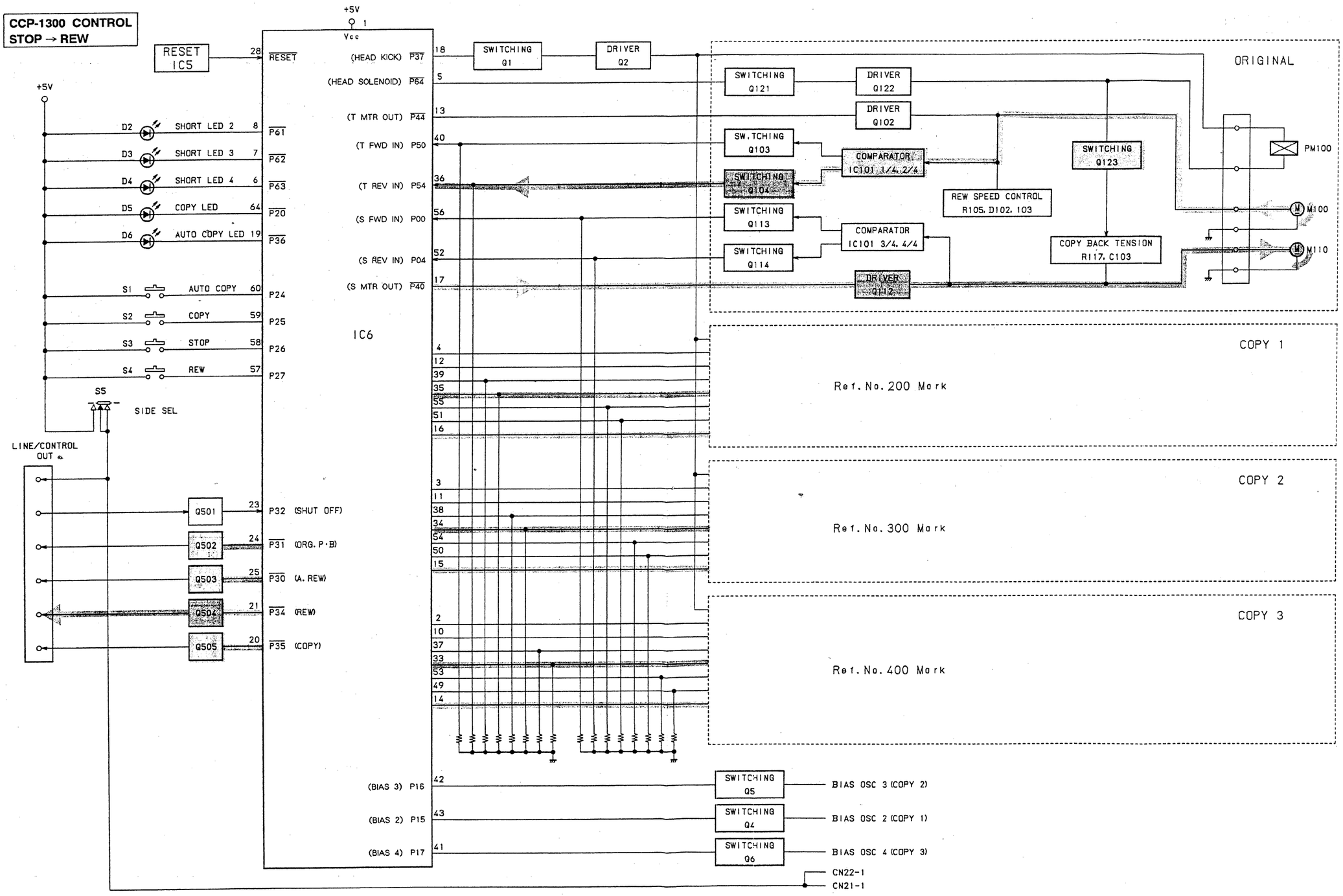
; Operating or high portion
; Operating or low portion



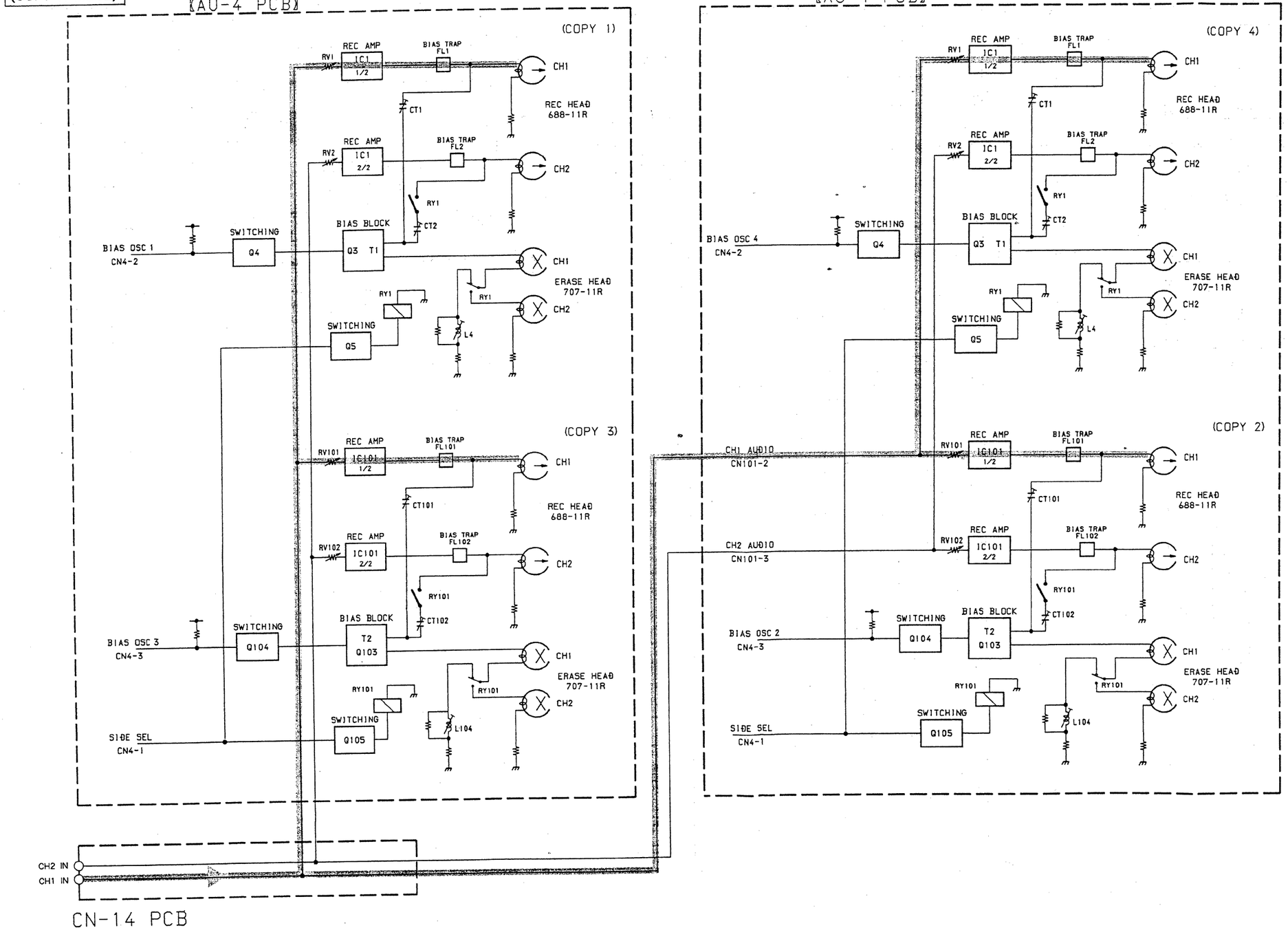
CCP-1300 CONTROL
STOP → COPY



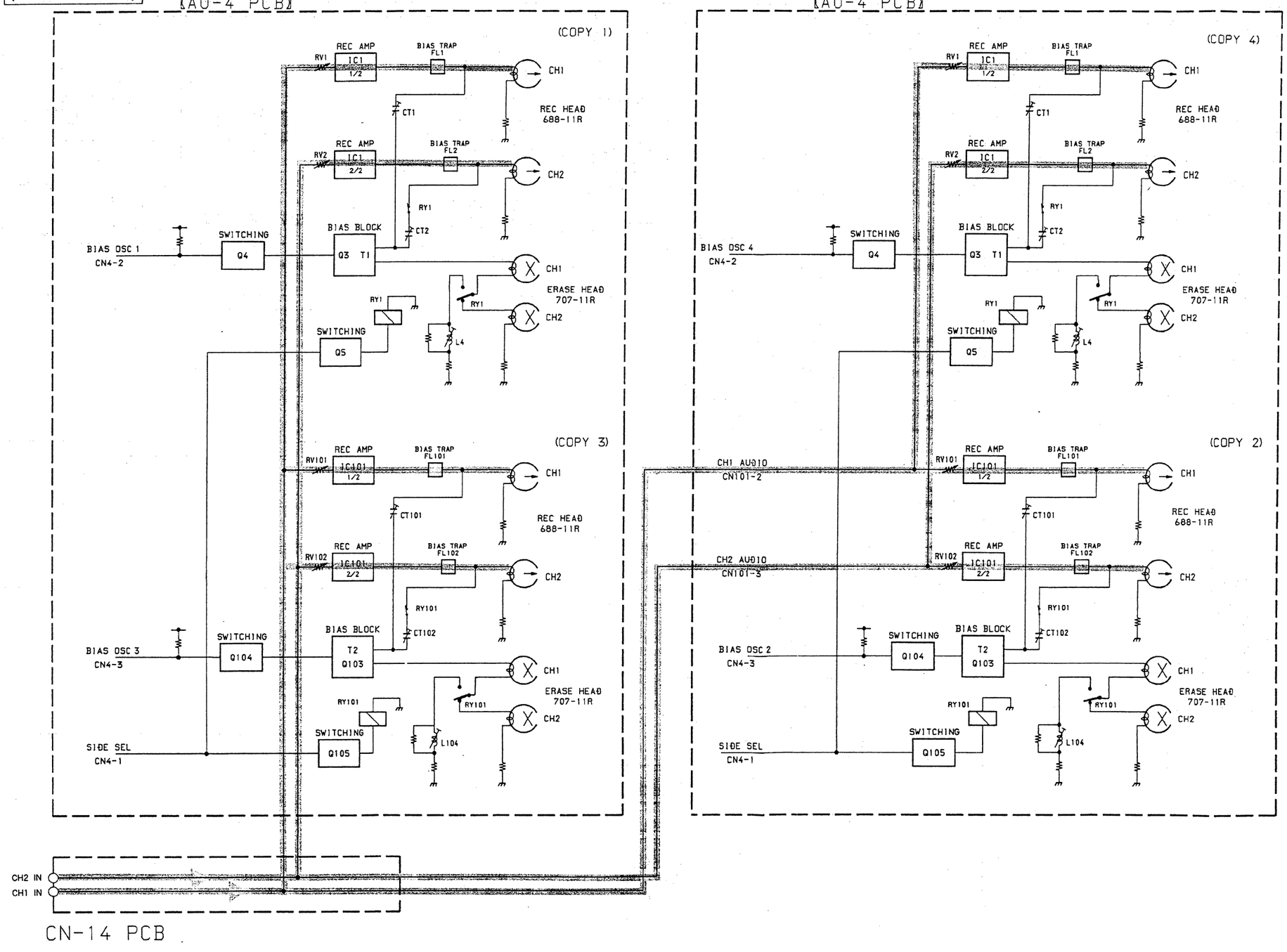
CCP-1300 CONTROL
STOP → REW



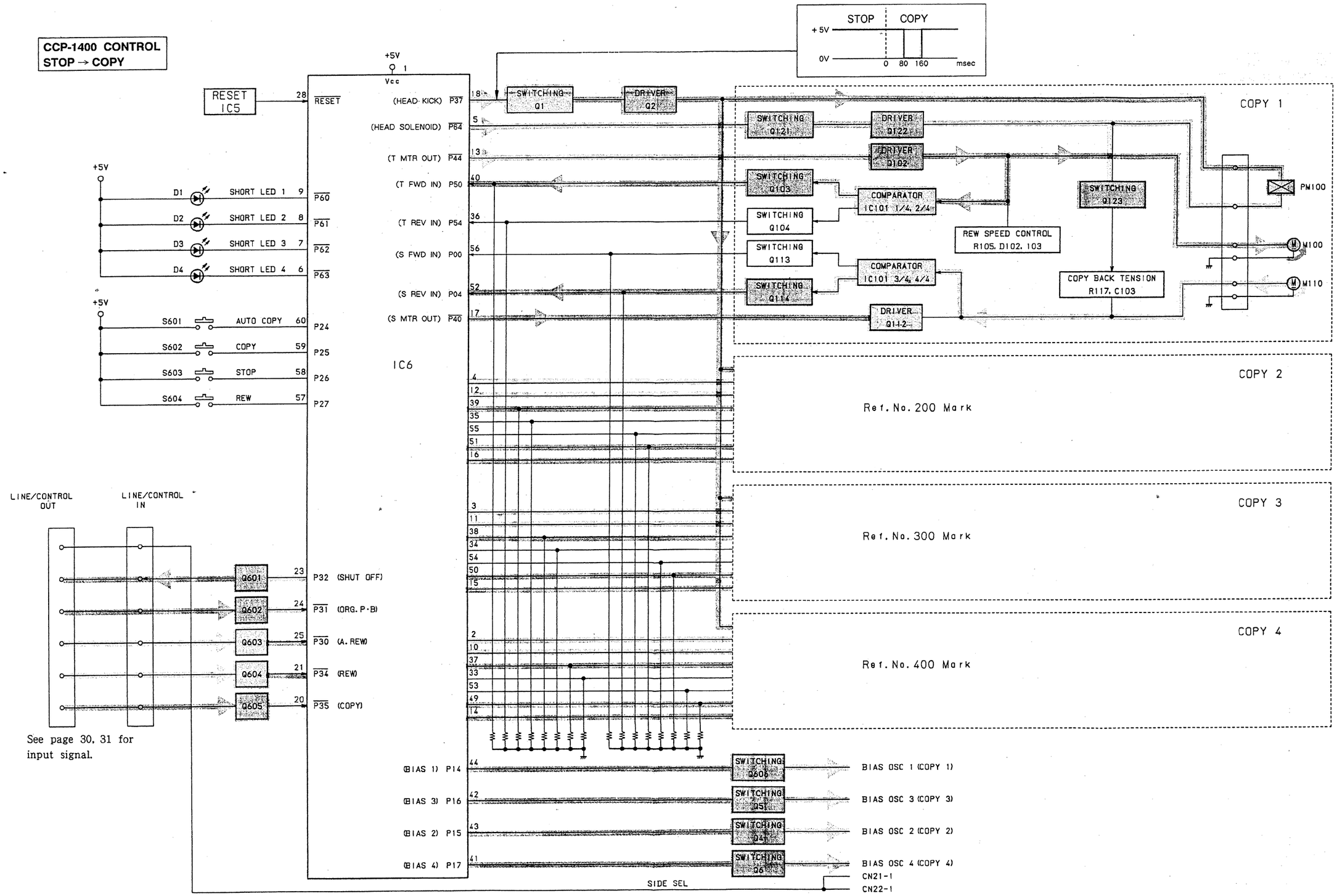
CCP-1400 AUDIO (COPY A MODE)



CCP-1400 AUDIO (COPY A+B MODE)



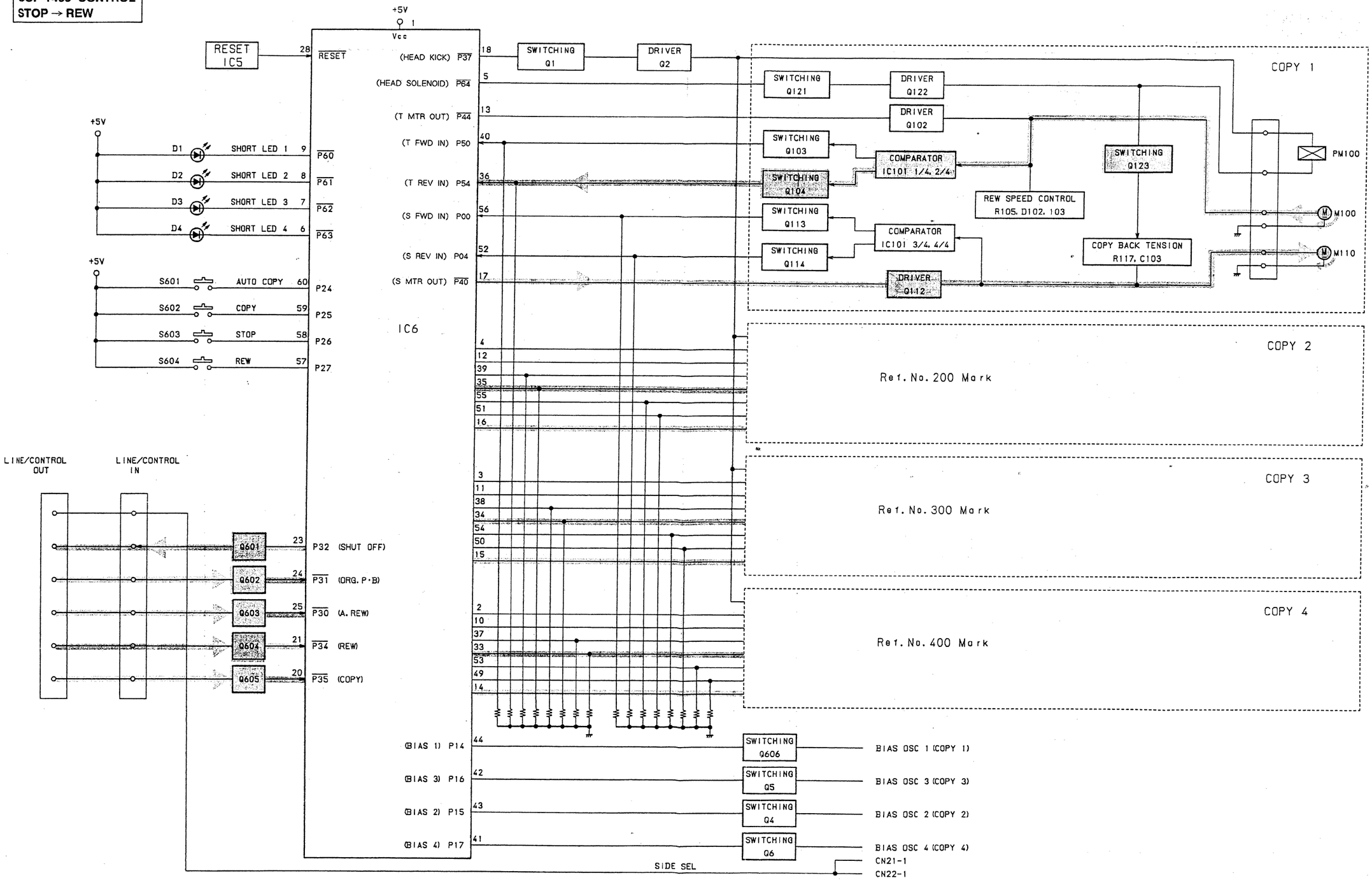
CCP-1400 CONTROL
STOP → COPY



See page 30, 31 for input signal.

CCP-1400
STOP → R

CCP-1400 CONTROL
STOP → REW



2-2. CAPSTAN ASSEMBLY

The unit employs 4 sets of capstan assemblies to drive a capstan motor using 2 capstan belts.
Figure 1 shows a layout of capstan assemblies and capstan motor as viewed from rear side of chassis with the bottom plate removed.

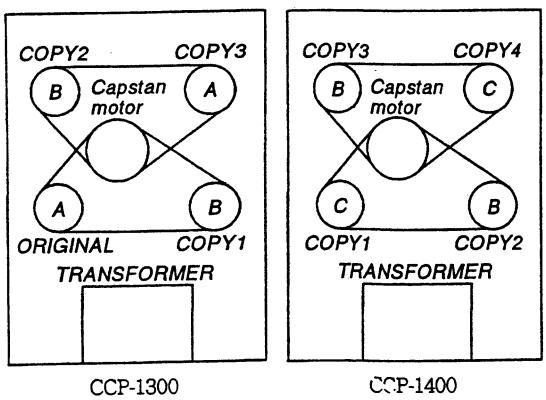


Figure 1

2-2-1. Speed Lag between Original MD and Copy MD

In the CCP-1300/1400, the speed in the copy MD is slower by 1% than that in the original MD in order to prevent an unrecorded portion that will otherwise be present due to the fact that the copy tape is rewounded faster than original tape.
This speed lag is done with difference in diameter of flywheels.

2-2-2. Kind and Arrangement of Capstan Assemblies

The kind and combination of capstan assemblies are as shown in Figure 1 and Table 1 ; a total of three kinds are available in the CCP-1300/1400.

MD CCP-1300 /CCP-1400	CCP-1300	CCP-1400
ORIGINAL /COPY1	A-2109-010-A Capstan (A) Assy	A-2109-011-A Capstan (C) Assy
COPY1 /COPY2	A-2109-009-A Capstan (B) Assy	A-2109-009-A Capstan (B) Assy
COPY2 /COPY3	A-2109-009-A Capstan (B) Assy	A-2109-009-A Capstan (B) Assy
COPY3 /COPY4	A-2109-010-A Capstan (A) Assy	A-2109-011-A Capstan (C) Assy

Table 1

2-2-3. Identification and Dimension of Capstan Assemblies

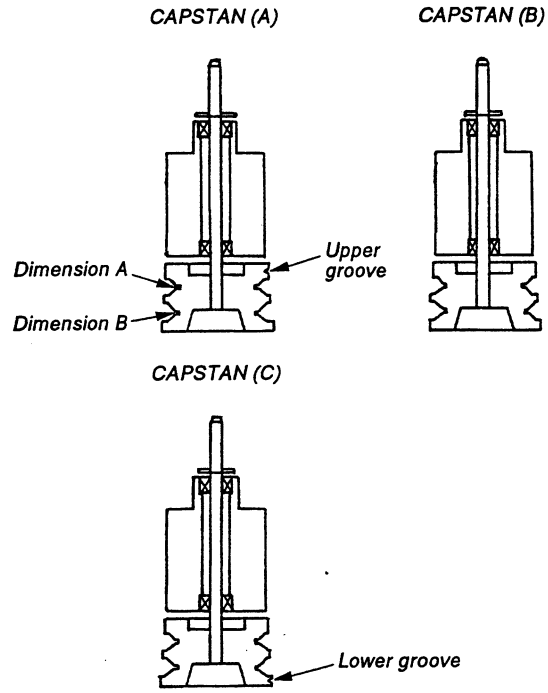


Figure 2

Identification of capstan assemblies :
1. Capstan (A) assembly···Upper groove in flywheel
2. Capstan (B) assembly···No groove
3. Capstan (C) assembly···Lower groove in flywheel

Flywheel inner diameter :

	Capstan (A) Assy	Capstan (B) Assy	Capstan (C) Assy
Dimension A	19.87	20.0	20.07
Dimension B	20.07	20.0	20.07

Note : Replace the capstan assembly with the same kind of capstan assembly when replacement is necessary.
Also, engage the belt at the same position, otherwise the speed will change.

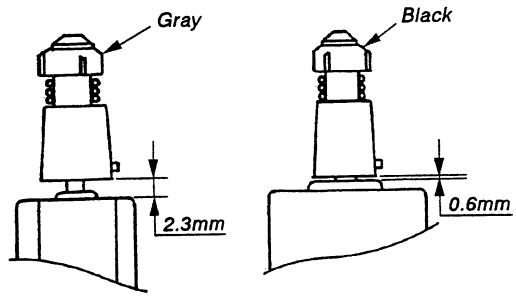
2-2-4. When Eliminating Speed Lag between Original and Copy

To make a tape without speed lag, the CCP-1300 must be modified since there is a 1% speed lag between original MD and copy MD in the CCP-1300/1400. Modification is made by replacing the capstan (A) Assy used for original MD in the CCP-1300 with capstan (C) Assy.

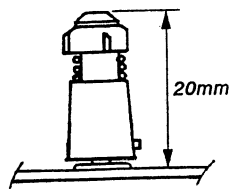
2-3. REEL HEAD ASSEMBLY POSITION

There are two methods available for replacing the reel head.

1) When reel head assembly is mounted on the stand alone motor (in case of motor change, etc.)
   Relative position between reel head and stand alone motor is A and B in Figure 3.



A : Reel head (L) Assy B : Reel head (R) Assy



C : Height from chassis

Figure 3

2) Positioning from chassis (if motor is attached to chassis)
   The distance from chassis to real head top is 20mm as shown Figure 3C.

Notes : 1. After replacement, confirm that the motor does not contact the reel head assembly.
2. Tighten the reel head assembly fixing screws (hex. socket head setscrew 2 × 3) with a hex. key wrench.
3. The left motor shaft is locally planed, and one of two setscrews should be positioned here.

2-4. ASSEMBLY OF CAPSTAN MOTOR AND MOTOR PULLEY

Insert slowly the motor pulley into the capstan motor shaft, and tighten hexagonal socket head screw where the pully is stopped.
Relative position between capstan motor and pulley is as shown in Figure 4.

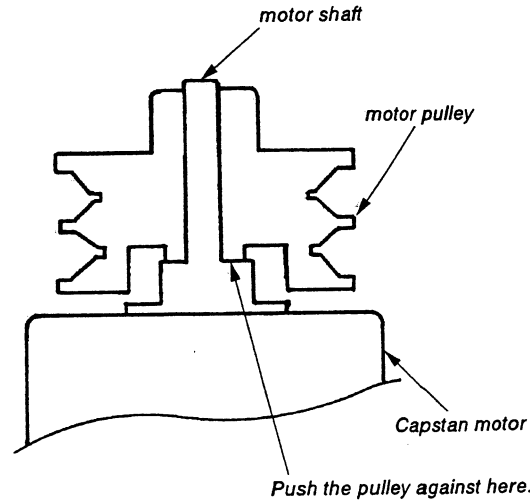
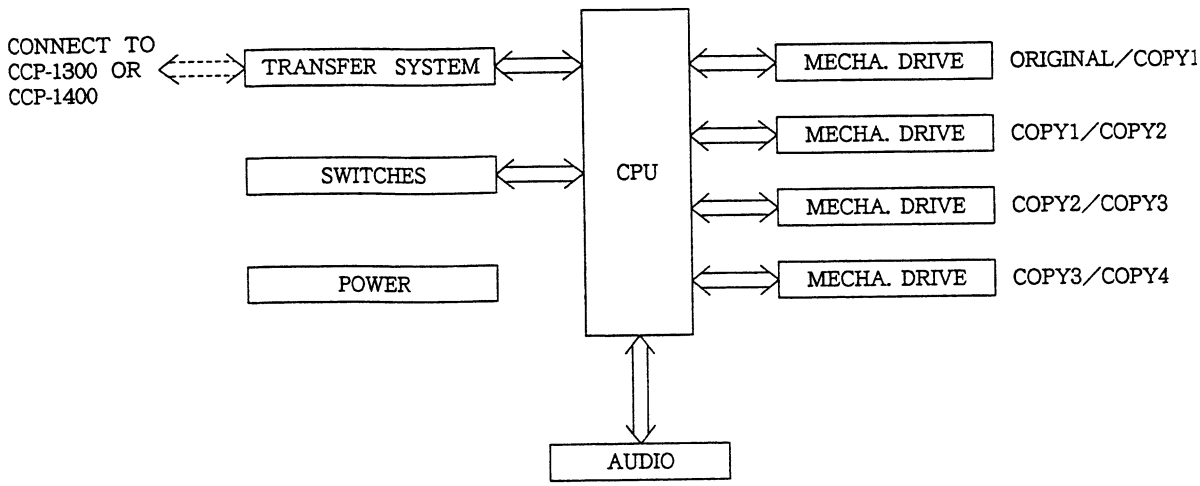


Figure 4

2-5. ELECTRICAL CIRCUIT

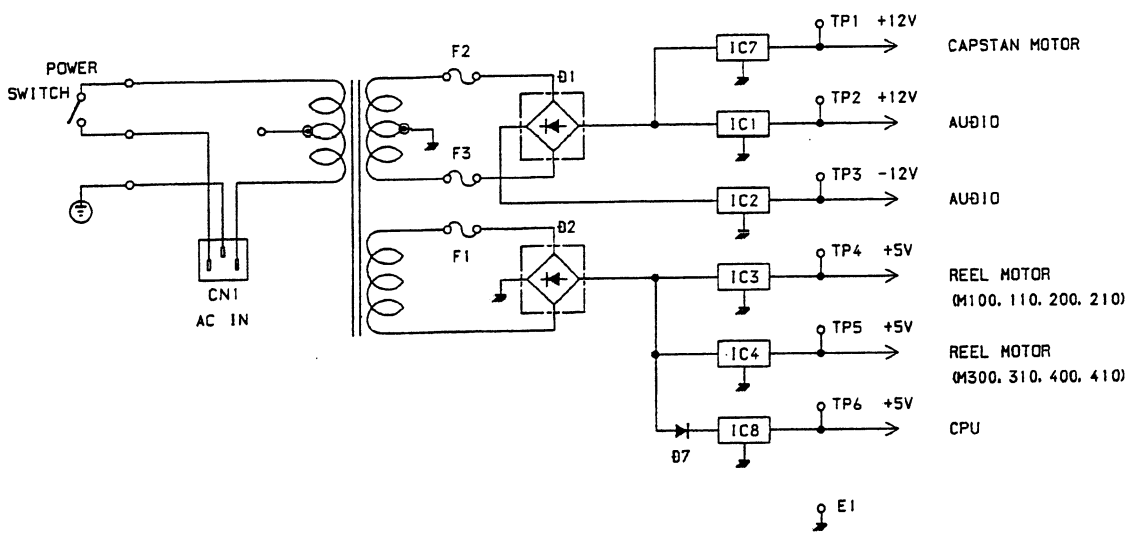
2-5-1. System block:

The circuits of the CCP-1300/1400 consist of each block as shown below.



2-5-2. Power supply:

Six 3-pin regulators are used, as shown below.



2-5-3. Mecha. drive:

Each reel motor is linked to the CPU with two input signals (FWD IN, REW IN) and one output signal (MTR OUT).

With the input signals, the CPU judges the motor status (run or stop)

With the output signal, the CPU controls the motor rotation.

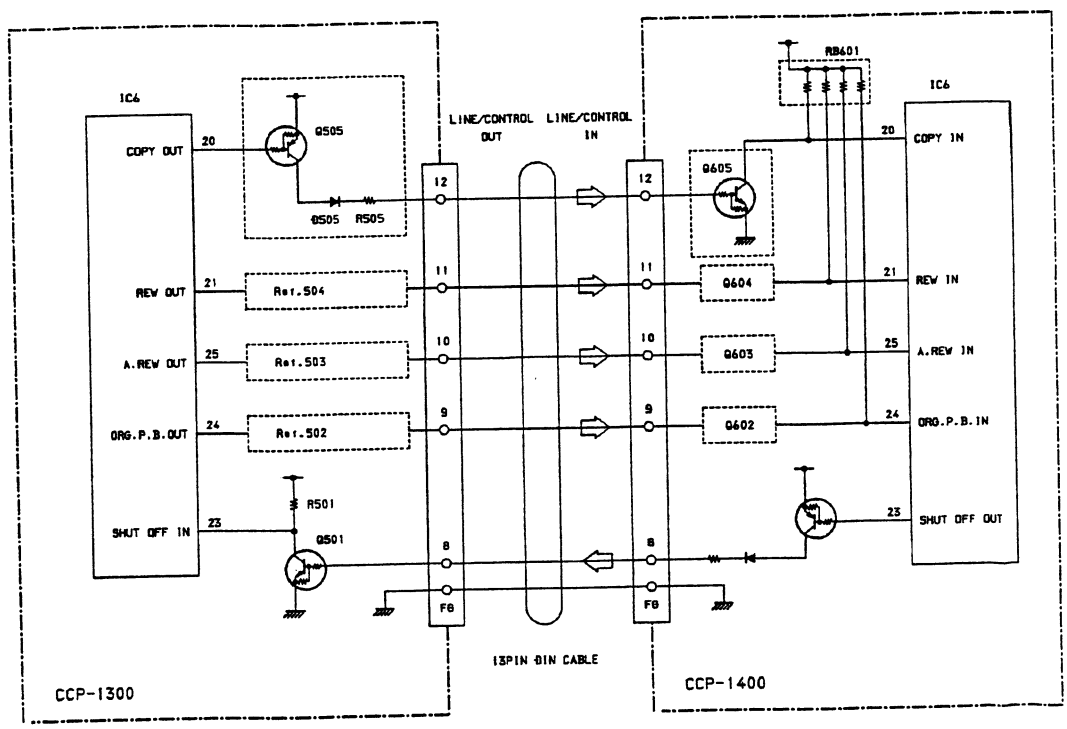
The control ports for reel motor are as listed below.

IC6 (CPU)

CPU PORT		IC6 (CPU) Pin No.				Operation		
		MD1	MD2	MD3	MD4	STOP	COPY	REW
OUT PUT	T MTR OUT	13	12	11	10	H	L	H
	S MTR OUT	17	16	15	14	H	H	L
INPUT	T FWD IN	40	39	38	37	L	H	L
	T REV IN	36	35	34	33	L	L	H
	S FWD IN	56	55	54	53	L	L	H
	S REV IN	52	51	50	49	L	H	L

2-5-4. Transfer system:

The digital signal system in the CCP-1300／1400 consists of three operation signal lines and two status signal lines. If plural units of CCP-1400 are connected, they are connected in parallel as viewed from the CCP-1300 side.



Operation signals.

13PIN CONNECTOR	STOP	COPY	REW	*A.REW
12	L	H	L	L
11	L	L	H	L
10	L	L	L	H

L : If CCP-1400 is not connected,"L" is "OPEN".

* A. REW : Only the tape for which the SHORT TAPE indicator does not illuminate is rewound.
In the AUTO COPY mode, REW→COPY→A. REW are output.

Status signal (from CCP-1300 to CCP-1400)

13PIN CONNECTOR	Playback of original tape	others
9	H	L

Status signal (from CCP-1400 to CCP-1300)

13PIN CONNECTOR	Even one MD in CCP-1400 is running	All MDs in CCP-1400 stop
8	H	L

2-5-5. Switches:

Four switches are provided each for CCP-1300 and 1400. (For the CCP-1400, S601 – S604 on the right side of SYS-3 board in the set.) The SIDE SELECT switch signal is not input to the CPU but it operates directly the relays on the audio board.

The set provides two special modes for service (cleaning mode and service mode), and these modes can be activated by the switch operation.

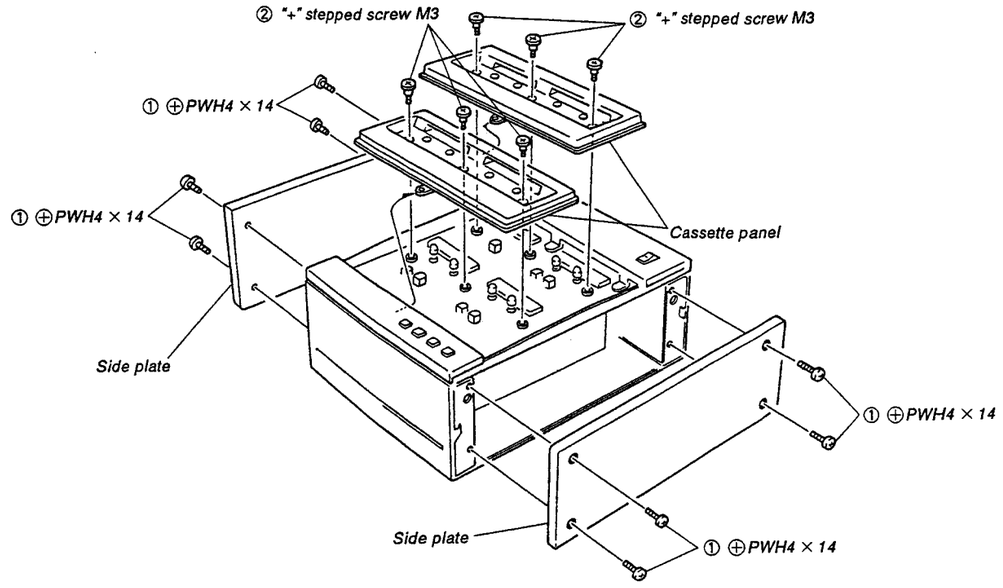
SECTION 3
DISASSEMBLY

[Side plate]

① Remove screws (4 pcs each).

[Cassette panel]

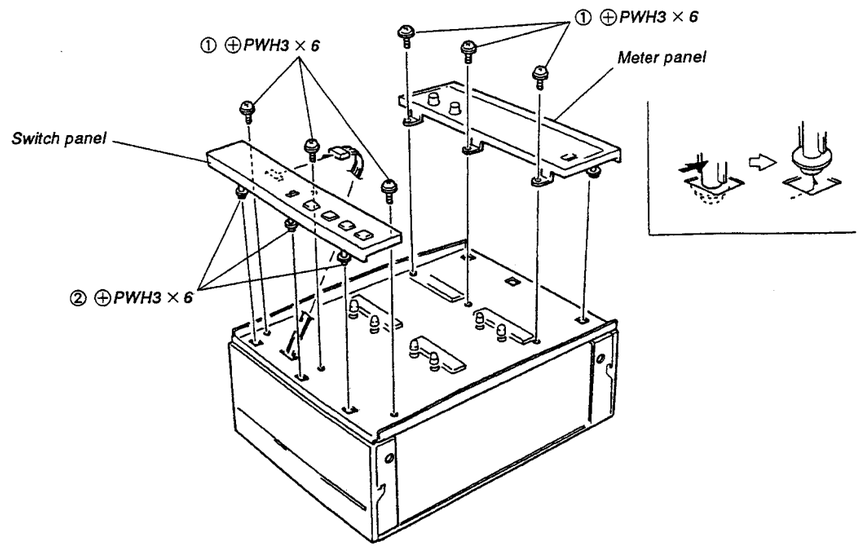
② Remove screws (3 pcs each). Note that a protruded hook is attached to each panel.



[Meter Panel] [Switch panel]

① Remove screws (3 pcs each).

② Disengage hooks (3 places each) of chassis.

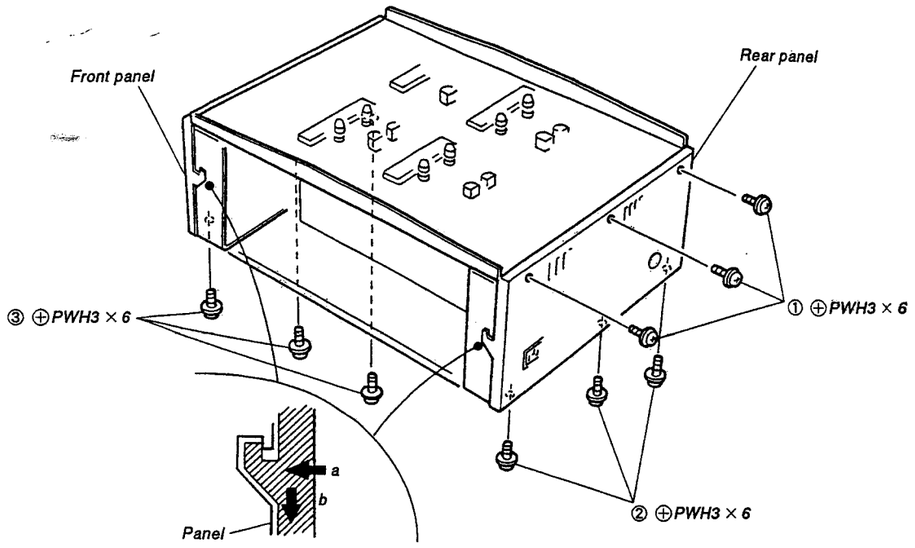


[Rear panel]

①, ② Remove screws (total 6 pcs).
Pushing the panel in direction "a", disengage the hook toward the direction "b".

[Front panel]

③ Remove screws (total 3 pcs).
Pushing the panel in direction "a", disengage the hook toward the direction "b".

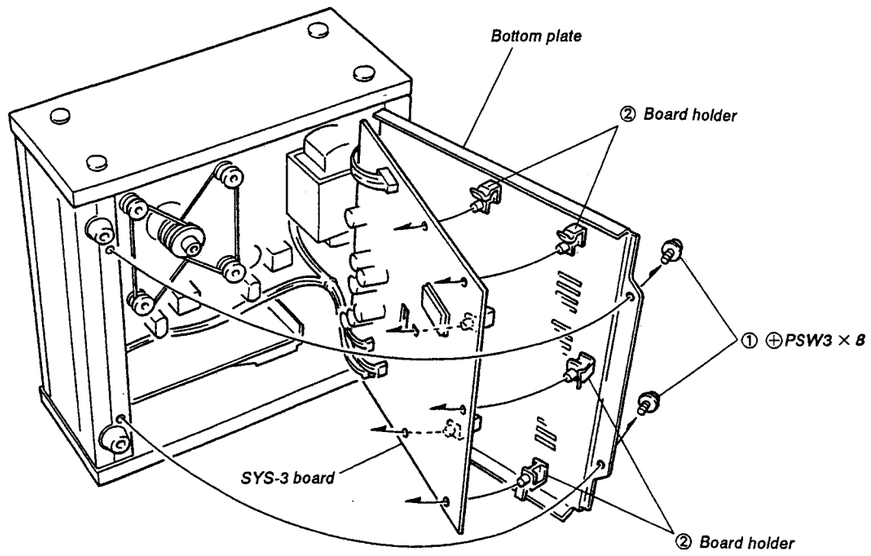


[Bottom plate]

① Remove screws (2 pcs), and the bottom plate will open together with the SYS-3 board.

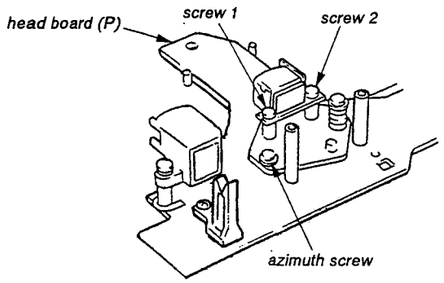
[SYS-3 board]

② Remove the board holders (6 places), and the SYS-3 board will open.

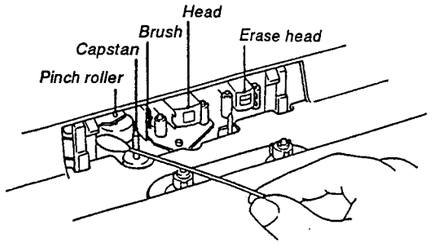


HEAD REPLACEMENT

1. Disconnect the lead wires of head at the solder part.
2. Remove the head fixing screws. (For screw 1, only loosen it.)
3. Install a new head with screws 1 and 2.
4. After installation, adjust height and azimuth of the head.



The set provides a cleaning mode and a service mode to facilitate the maintenance. Operate it in the procedure below.
[Cleaning mode]



The head block will come out so that the head and pinch roller can easily be cleaned.
Operating method
CCP-1300

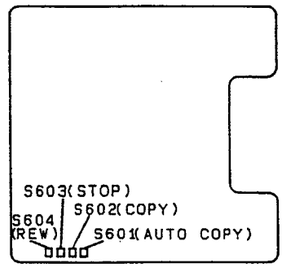
Take out the cassette. Turn on the POWER switch while pressing the COPY button, and the head block will come out in about 4 seconds. The head block returns automatically after 5 munits, however, the cleaning mode cannot be reset unless other than COPY button is pressed.

CCP-1400

Connect the CCP-1400 to the CCP-1300, turn on the POWER switch with the CCP-1300 in the cleaning mode, and the cleaning mode is then activated.
If the CCP-1400 alone is operated, turn on the POWER switch while pressing the COPY button (S602) inside the set, and the cleaning mode will be activated in about 4 seconds.(At this time, NEVER connect the CONTROL CABLE.)
After that, if the cleaning mode is reset by pressing other than COPY button, the CCP-1400 can be operated in the same manner as CCP-1300 by using the S601 – 604 switches.

However, the CCP-1400 cannot output signals to the transfer system.
For normal operation (linking with CCP-1300), turn off the POWER switch once.

SYS-3 BOARD COMPONENT SIDE



[Service mode]
This mode facilitates adjustment of reel motor speed and head azimuth.
Operating method
The CCP-1300 and CCP-1400 can be operated in the same method.

1) Turn on the POWER switch while pressing the REW and AUTO COPY buttons.
2) Keep pressing both buttons, and when the SHORT TAPE indicator goes off after about 4 seconds, release the AUTO COPY button. (At this time, do not release the REW button.)
3) Further after 2 seconds, make sure that the SHORT TAPE indicator comes on again and the service mode is activated, then release the REW button.

The following operation is available.

AUTO COPY : Same status as the COPY, with exception that the bias does not rise up. Accodingly, the azimuth can easily be checked when the record head is connected directly to the playback amplifier.
COPY : The COPY status is maintained, so that the take up reel and plunger circuits can be checked.
REW : The REWIND status is maintained, so that the supply reel circuit can be checked.

Note : In the COPY and REWIND modes, the shutoff and brake circuits do not function. Therefore, never insert a cassette. If a cassette is inserted, the real motor can be damaged at the end of tape.

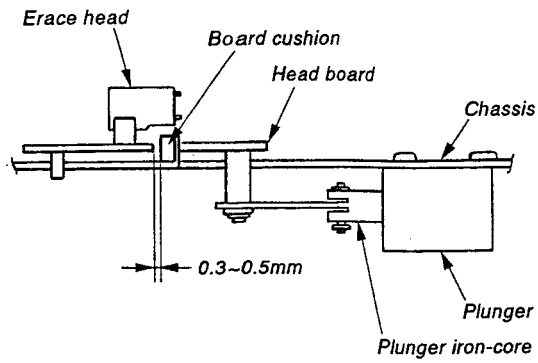
[Test tape]

Type	Part No.	Signal	
		Frequency (Hz)	Level (dB)
P-4-L300	7-819-011-11	315	0
P-4-A063	7-819-014-11	6.3 k	− 10
P-4-A100	7-819-016-11	10 k	− 10
WS-48A	7-819-032-11	3 k	0
CQ-012C	8-909-708-02	Mirror, 12 μ base	
CQ-201B	8-909-708-41	Torque	

SECTION 4
ADJUSTMENT

4-1. ADJUSTMENT OF PLUNGER STROKE

The plunger stroke must be adjusted to determine the head advance amount, when the plunger is replaced.



Replacement and Adjustment :

1. Removing the cassette retainer (3-164-259-01) on the front side of chassis will expose the plunger fixing screws (PSW 3 × 6).
2. Replace the plunger, fix it temporarily to the chassis, and link it to the head board.
3. Push in the plunger iron-core until it contacts closely the plunger main body, so that the head board advances.
4. Fix the plunger at the position where a clearance between head board and board cushion (3-146-245-01) bonded to the notch in the chassis is 0.3 to 0.5 mm.

Note : After replacement, confirm in the copy satatus (service mode or cleaning mode) that the clearance of 0.3~0.5mm is ensured.

4-2. REPLACEMENT OF ELECTROSTATIC BRUSH

An electrostatic brush is attached to the head board to eliminate static discharge. It comes in contact with the tape when the head board advances. Therefore, it wears.

Follow the procedure provided below when replacing the brush.

1) Remove the electrostatic brush assembly (PS 2 × 3) on the head board, then peel the brush off the brush bracket (3-164-234-01).
2) Clean the brush bracket with alcohol, and bond a new brush.
3) The electrostatic brush position is as shown in Figure 1.

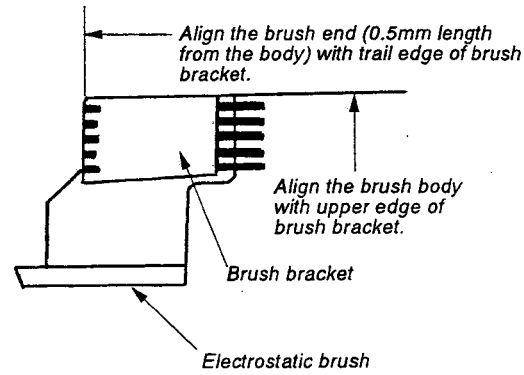
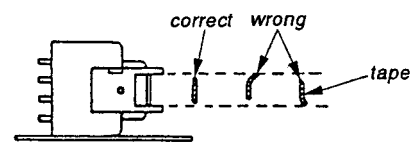

Align the brush end (0.5mm length from the body) with trail edge of brush bracket.
Align the brush body with upper edge of brush bracket.
Brush bracket
Electrostatic brush

Figure 1

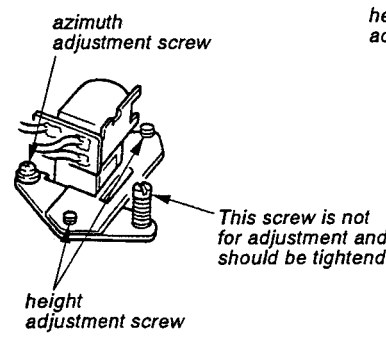
Note : The brushes are made of thin stainless wires. Take care not to bend them during replacement.

HEAD HIGHIT ADJUSTMENT

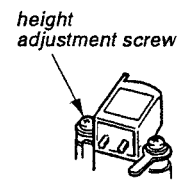
1. Install a mirror tape cassette (CQ-012C) and depress COPY button and STOP button alternately and watch the tape at tape guide.
2. In COPY mode, if tape is curled along tape guide, adjust the respective adjustment parts shown below.



Record and Playback Head :



Guide Head :



Note : Also pay attention to head verticality and flapping, and execute visual confirmation. For this, turn the front and back height adjustment screws and the vertical adjustment screw each for about the same amount.

4-3. HEAD AZIMUTH ADJUSTMENT

Select either of the following three methods.

*Don't press the Copy or Rewind switch in service mode when insert the cassette tape.

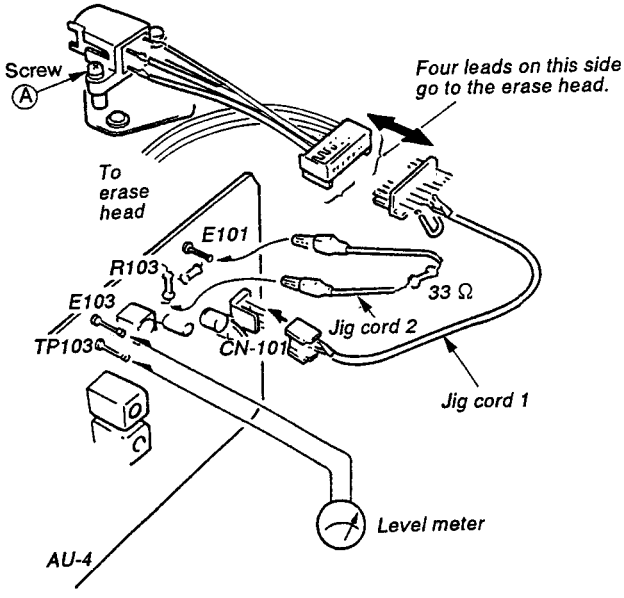
Using the Head demagnetizer, demagnetize the head and clean the pinch roller and head.

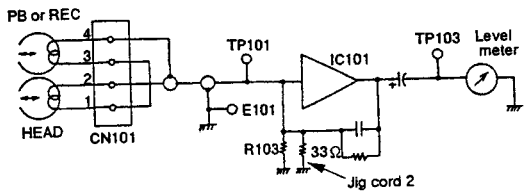
A. When the record amplifier (AU-4) in the set is used. Adjustable only for REC head.

Test equipment : Jig cord 1
Jig cord 2
Test tape (P-4-A100-2)
Level meter

Procedure

1. Disconnect connectors on each head the AU-2 or AU-4 board.
2. Disconnect the audio cable connector to CN101 on the AU-4 board from CN14 board.
3. Connect the connector on the head to be adjusted to the jig cord 1, and connect another end to CN101 on the AU-4 board.
4. Connect the one side of the jig cord 2 (resistance 33Ω) to R103 in parallel and another end to E101.
5. Insert the standard tape 10kHz (P-4-A100-2) into the deck to be adjusted.
6. Connect a "+" terminal of level meter to TP103 the AU-4 board, and a "−" terminal to the E103.
7. Press the AUTO COPY switch for the service mode (see the service mode paragraph P34) to activate the playback status.
8. Rotate the aziumuth adjust screw "Ⓐ" so that the level meter reading becomes the maximum.





B. When the playback amplifier (AU-2) in CCP-1300 is used

Test equipment : Jig cord 3
Test tape (P-4-A100-2)
Level meter
CCP-1300

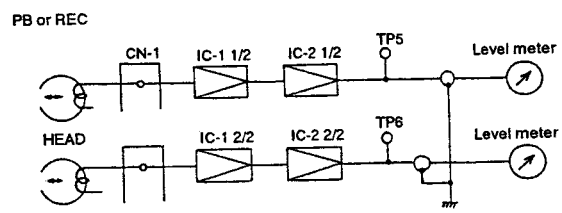
Procedure

※1. Disconnect the connector CN1 from the original head (playback) on the AU-2 board.

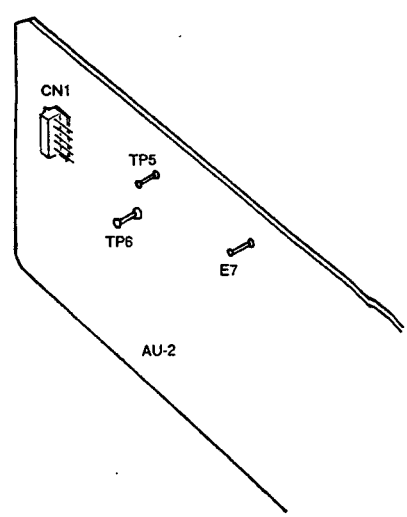
※2. Connect the connector on the head to be adjusted to the jig cord 3, then connect another end to the connetor CN1 on the AU-2 board.

3. Connect a "+" terminal of level meter to TP5 or TP6 on the AU-2 board, and a "−" terminal to the E7.
4. Insert the standard tape 10kHz (P-4-A100-2) into the deck to be adjusted.
5. Press the AUTO COPY switch for the service mode (see the service mode paragraph P34) to activate the playback status.
6. Rotate the azimuth adjust screw "Ⓐ" so that reading of both level meters (TP5 and TP6 becomes the maximum.

* The CCP-1400 is adjusted using the playback amplifier in the CCP-1300.



The items marked ※ are not necessary for P.B. head adjustment.

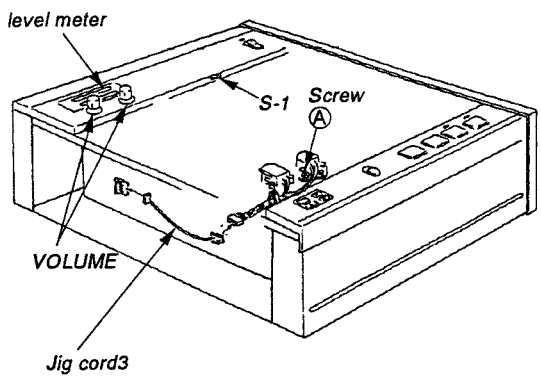


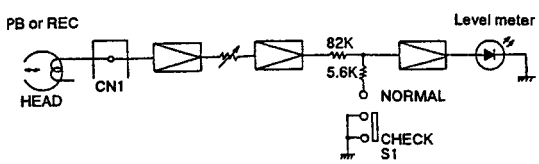
C. When the level meter on the set is used
Test equipment : Jig cord 3
Test tape (P-4-A100-2)

Procedure

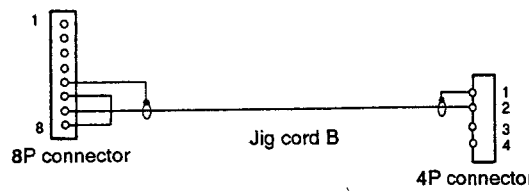
1. Change over the S1 on the meter board to CHECK side.
※ 2. Disconnect the connector CN1 on the original head (playback) from the AU-2 board.
※ 3. Connect the connector on the head to be adjusted to the jig cord 3, then connect another end to the connector CN1 on the AU-2 board.
4. Insert the standard tape 10kHz (P-4-A100-2) into the deck to be adjusted.
5. Press the AUTO COPY switch for the service mode (see the service mode paragraph to activate the playback status P 34.)
6. Rotate the azimuth adjust screw "Ⓐ" so that reading of both level meters becomes the maximum. (Since fine adjustment is possible where the level meter is around 0dB, rotate to azimuth adjust screw "Ⓐ" while adjusting the VOLUME so that the playback level of 10kHz is about 0dB.)
7. After adjustment, return the S1 on the meter board from CHECK side to NORMAL side.
With the S1 in CHECK position, the level is raised by about 20dB so that a weak signal from the head can be indicated on the meter.

The items marked ※ are not necessary for P.B. head adjustment.

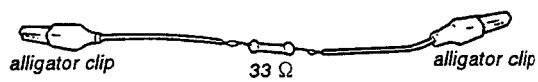




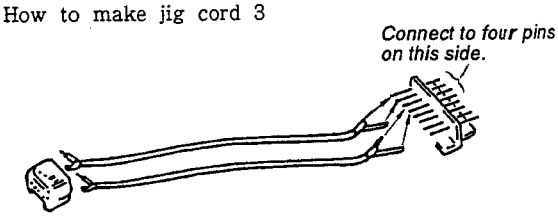
How to make jig cord 1

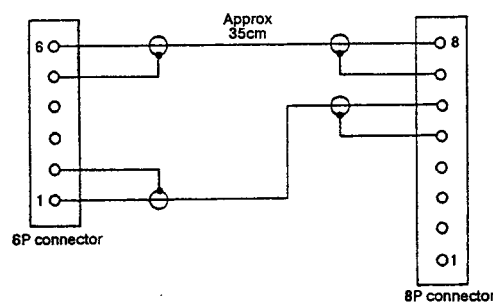


How to make jig cord 2



How to make jig cord 3





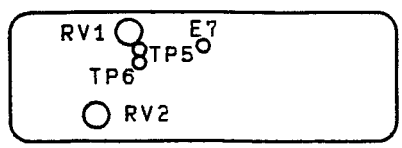
4-5. ADJUSTMENT OF PLAYBACK LEVEL ANDFREQUENCY CHARACTERISTICS (CCP-1300 only)

Test equipment : Level meter
Test tape (P-4-L300, P-4-A063, P-4-A100-2)

Procedure

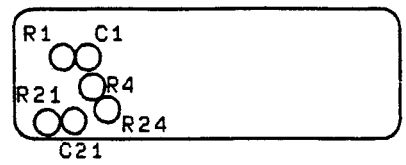
1. Using the Head demagnetizer, demagnetize the head and clean the pinch roller and head.
2. Set the playback level controls A and B (RV1 and RV11 on the MT-2 board) to the center.
3. Turn the POWER switch ON.
4. Set the SIDE selector to "A + B".
5. Load the standard tape (P-4-L300) on the original side.
6. Connect a "+" terminal of level meter to TP5 on the AU-2 board, and a "−" terminal to the E7, then press the COPY button.
7. Adjust the RV1 on the AU-2 board so that the playback output level satisfies the specification.
8. Connect a "+" terminal of level meter to TP6 on the AU-2 board, and a "−" terminal to the E7, then adjust the RV2 on the AU-2 board in the same manner.
   Specification : 0dB ± 0.5dB

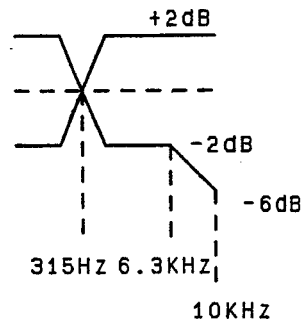
AU-2 BOARD COMPONENT SIDE



9. Re-connect the "+" terminal of level meter from TP6 to TP5 on the AU-2 board.
10. Next, load the standard tape (P-4-L300, P-4-A063, P-4-A100-2) and measure the playback output level in the same manner.
11. Again, re-connect the "+" terminal of level meter from TP5 to TP6 on the AU-2 board, and measure the playback output level in the same manner.
12. If the playback output level is out of specification, replace the following parts, and repeat adjustment in steps 9 to 11.

AU-2 BOARD COMPONENT SIDE





CH	P-4-A063 6.3kHz	P-4-A100 100kHz
CH1	R4	R1, C1
CH2	R24	R21, C21

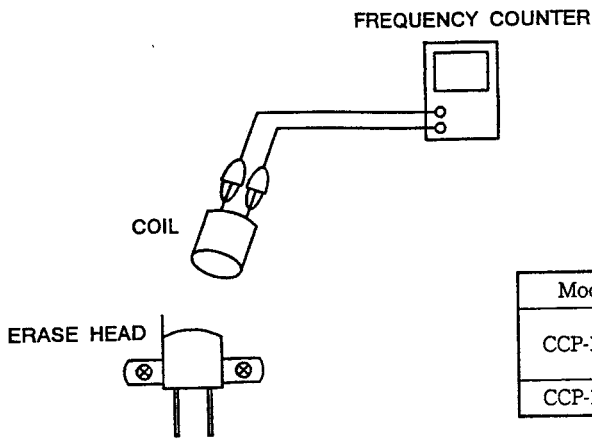
Larger value raises the level.

4-6. BIAS FREQUENCY ADJUSTMENT (CCP-1300, 1400)

Test equipment : Frequency counter
Coil (10mH)

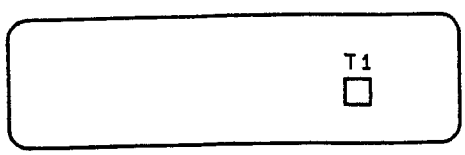
Procedure

1. Connect the coil to the frequency counter.
2. Set the SIDE selector on the CCP-1300 to "A + B". In the case of CCP-1400 adjustment, the SIDE selector has already been in "A + B" status.
3. Activate the service mode. In the case of CCP-1400 adjustment, the service mode is activated by operating the switch on the SYS-3 board inside the set. (DO NOT INSERT A CASSETTE. →P34)
4. Press the COPY button, and after 30seconds, bring the coil closely to the erase head, then adjust the following bias transformers so that the bias frequency is 550kHz.
   Specification : 550kHz ± 3%



Model	Board	Bias transformer
CCP-1300	AU-2	T1
	AU-4	T1, T101
CCP-1400	AU-4	T1, T101

AU-2 BOARD COMPONENT SIDE



AU-4 BOARD COMPONENT SIDE

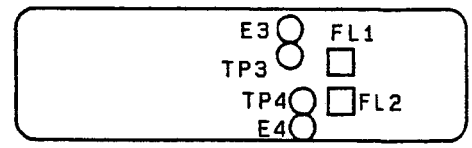
4-7. BIAS TRAP ADJUSTMENT (CCP-1300, 1400)

Test equipment : Level meter

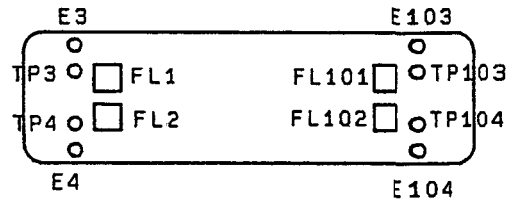
Procedure

1. Set the SIDE selector on the CCP-1300 to "A + B". In the case of CCP-1400 adjustment, the SIDE selector has already been in "A + B" status.
2. Activate the service mode. In the case of CCP-1400 adjustment, the sevice mode is activated by operating the switch on the SYS-3 board inside the set. (DO NOT INSERT A CASSETTE. →P34)
3. Press the COPY button, connect the level meter to the following test points on the AU-2 and AU-4 boards, and adjust the bias trap associated with the test point so that the output becomes the minimum.

AU-2 BOARD COMPONENT SIDE



AU-4 BOARD COMPONENT SIDE



Board	CCP-1300	CCP-1400	CH	Level meter Connection		Adjust
				+ terminal	− terminal	
AU-2	COPY2	−	CH1	TP3	E3	FL1
			CH2	TP4	E4	FL2
AU-4	COPY3	COPY1 COPY4	CH1	TP3	E3	FL1
			CH2	TP4	E4	FL2
	COPY1	COPY2 COPY3	CH1	TP103	E103	FL101
			CH2	TP104	E104	FL102

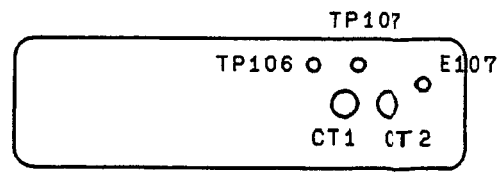
4-8. BIAS CURRENT PRE-ADJUSTMENT (CCP-1300, 1400)

Test equipment : Voltmeter

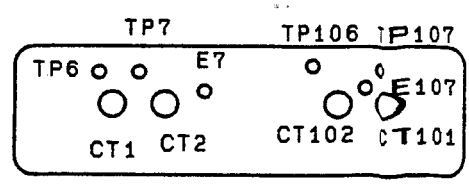
Procedure

1. Active the service mode. In the case of CCP-1400 adjustment, the service mode is activated by operating the switch on the SYS-3 board inside the set. (DO NOT INSERT A CASSETTE. →P34)
2. Press the COPY button, connect the voltmeter to the following test points on the AU-2 and AU-4 boards, and adjust the trimmer capacitor associated with the test point so that the output becomes 30mV ± 3mV.

AU-2 BOARD COMPONENT SIDE



AU-4 BOARD COMPONENT SIDE



Board	CCP-1300	CCP-1400	CH	Voltmeter Connection		Adjust
				+ terminal	− terminal	
AU-2	COPY2	−	CH1	TP106	E107	CT1
			CH2	TP107	E107	CT2
AU-4	COPY3	COPY1 COPY4	CH1	TP6	E7	CT1
			CH2	TP7	E7	CT2
	COPY1	COPY2 COPY3	CH1	TP106	E107	CT101
			CH2	TP107	E107	CT102

4-9. ADJUSTMENT OF ERASE HEAD DUMMY COIL (CCP-1300, 1400)

Before this adjustment, the bias current pre-adjustment must have been finished.

Test equipment : Voltmeter
Frequency counter
Coil (10mH)

Procedure

1. Set the SIDE selector on the CCP-1300 to "A + B". In the case of CCP-1400 adjustment, the SIDE selector has already been in "A + B" status.
2. Activate the service mode. In the case of CCP-1400 adjustment, the service mode is activated by operating the switch on the SYS-3 board inside the set. (DO NOT INSERT A CASSETTE. →P34)
3. Press the COPY button.
4. Measure voltage at the following test points to check for 30mV ± 3mV. If out of the specification, again perform the bias current pre-adjustment.

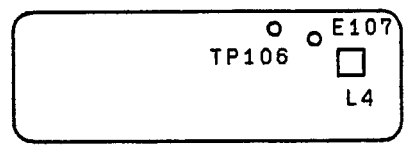
Board	CCP-1300	CCP-1400	Voltmeter Connection	
			+ terminal	− terminal
AU-2	COPY2	−	TP106	E107
AU-4	COPY3	COPY1 COPY4	TP6	E7
	COPY1	COPY2 COPY3	TP106	E107

5. Connect the coil to the frequency counter.
6. Make the coil approach to each erase head to check that the bias frequency is 550kHz ± 3%. If out of the specification, again adjust the bias frequency.
7. Next, set the SIDE selector to the "A", and measure voltage at the following test points assoiciated with each COPY. Then, adjust the dummy coil so that difference between the measured voltage and that when the SIDE selector was in "A + B" status is within 3mV in the range of 30mV ± 3mV.
   In the case of CCP-1400 adjustment, grounding the test point TP200 on either AU-4 board places the SIDE selector in the status "A" (or status "A + B" if not grounding).

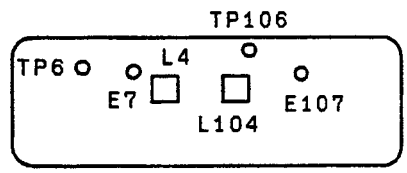
Board	CCP-1300	CCP-1400	Voltmeter Connection		Adjust
			+ terminal	− terminal	
AU-2	COPY2	−	TP106	E107	L4
AU-4	COPY3	COPY1 COPY4	TP6	E7	L4
	COPY1	COPY2 COPY3	TP106	E107	L104

8. Again, make the coil approach to the erase head, and adjust the bias transformer so that difference between the measured bias frequency and that when the SIDE selector was in "A + B" status is within 16kHz in the range of 550kHz ± 3%.

AU-2 BOARD COMPONENT SIDE



AU-4 BOARD COMPONENT SIDE



4-10. ADJUSTMENT OF RECORD LEVEL AND FREQUENCY CHARACTERISTICS

Before this adjustment, the bias current pre-adjustment must have been finished.

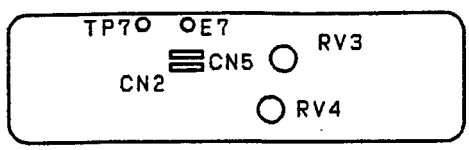
Test equipment : Voltmeter
Level meter
High quality cassette player
60-minute tape

CCP-1300

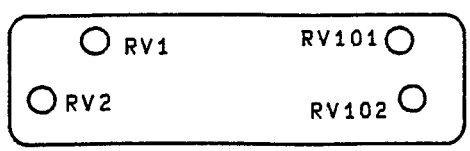
Procedure

1. Disconnect the connector CN2 on the AU-2 board in the CCP-1300, and connect the CN5 instead.
2. Set the SIDE selector on the CCP-1300 to the "A + B".
3. Turn the POWER switch ON.
4. Set a 60-minute tape to the ORIGINAL side of CCP-1300, and blank tapes for measurement to each COPY side.
5. Connect a "+" terminal of oscillator to the TP7 and a "−" terminal to the E7. Press the COPY button while entering the 0dB 5kHz signal.
6. After copying is finished, playback the copied tape with a standard cassette player to adjust each RV (on the AU-2 and AU-4 boards) for record level adjustment so that the level is − 1.5dB ± 1dB.

AU-2 BOARD COMPONENT SIDE



AU-4 BOARD COMPONENT SIDE



Board	CCP-1300	CH	Adjust
AU-2	COPY2	CH1	RV3
		CH2	RV4
AU-4	COPY3	CH1	RV1
		CH2	RV2
	COPY1	CH1	RV101
		CH2	RV102

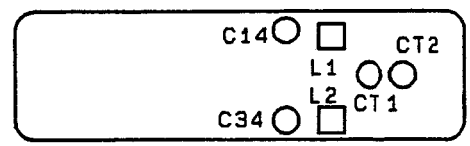
Turn RV2 for higher level.

7. With the oscillator connection maintained, press the COPY button while entering the following signals.
   − 20dB, 5kHz
   − 20dB, 100.8kHz
   − 20dB, 160kHz
8. Then, playback the copied tape with a standard cassette player, and repeat adjustment and replacement of adjust capacitor, coil and trimmer capacitor so that the level in each frequency satisfies the specification.

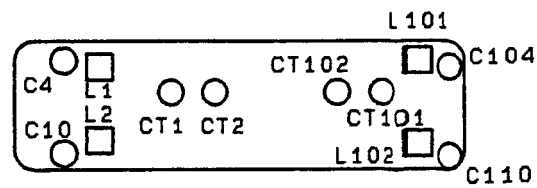
Board	CCP-1300	CH	Adjust		
			6.3kHz	10kHz	both
AU-2	COPY2	CH1	C14	L1	CT1
		CH2	C34	L2	CT2
AU-4	COPY3	CH1	C4	L1	CT1
		CH2	C10	L2	CT2
	COPY1	CH1	C104	L101	CT101
		CH2	C110	L102	CT102

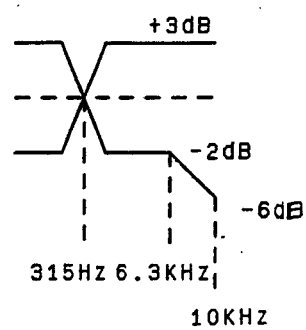
Larger capacitance raises high frequency range.

AU-2 BOARD COMPONENT SIDE



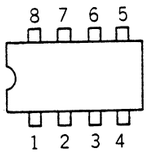
AU-4 BOARD COMPONENT SIDE





SECTION 5
SEMICONDUCTORS

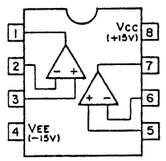
NE5532P (TI)



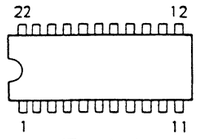
(Top view)

μPC4556C (NEC)

OPERATIONAL AMPLIFIER
(WIDE BAND, DECOMPENSATED)
– TOP VIEW –



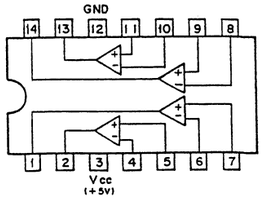
1R2E30 (SHARP)



(Top view)

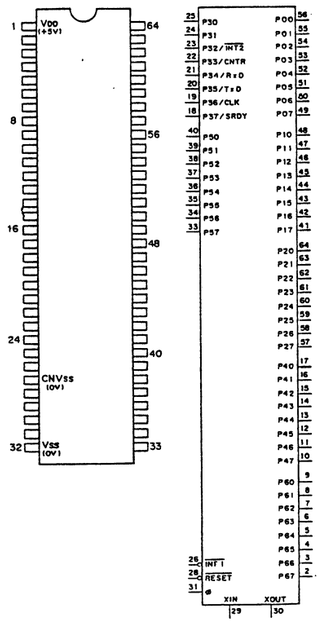
LM339N (TI)

COMPARATOR
– TOP VIEW –



M50747-XXXSP (FUJITSU)

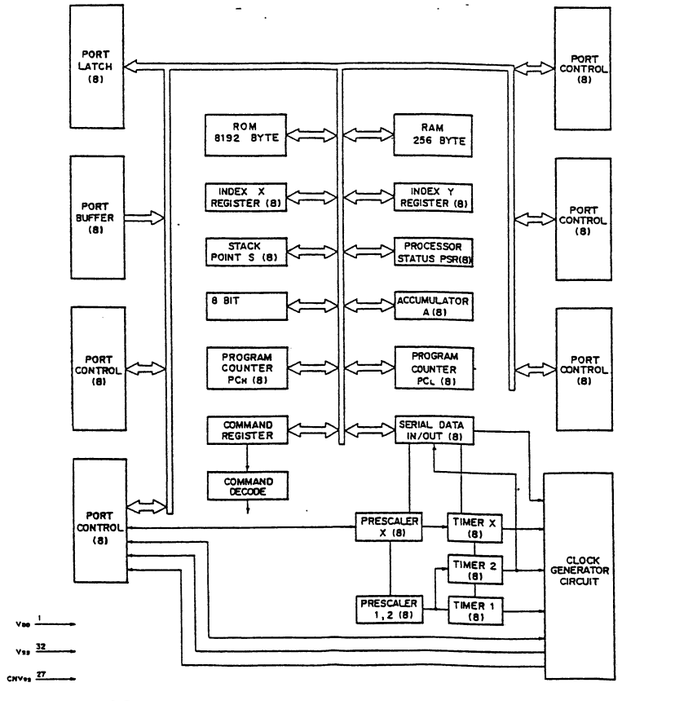
C-MOS PROCESS 8-BIT ONE CHIP MICROCOMPUTER
– TOP VIEW –



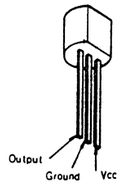
M50747 – xxx SP (1/2)

INT 1	; INTERRUPT 1 IN
P00–P07	;
P10–P17	;
P20–P27	; 8 BIT I/O PORT
P30–P37	;
P40–P47	;
P50–P57	; 8 BIT IN PORT
P60–P67	; 8 BIT OUT PORT
RESET	; RESET IN (⌐_)
X IN/OUT	; CLOCK IN/OUT
ø	; CLOCK TIMING OUT
P32/INT2	; PORT/INTERRUP2 IN/(T
P33/CNTR	; PORT/CONTROL IN/OU
P34/RXD	; RECEIVED DATA
P35/TXD	; TRANCEMITTED DATA
P36/CLK	; PORT/CLOCK IN/OUT
P37/SRDY	; SERIAL IN READY

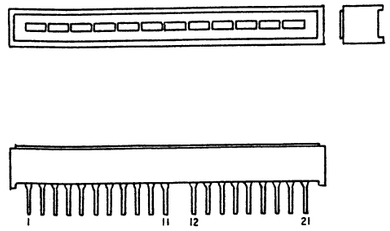
M50747 – xxx SP (2/2)



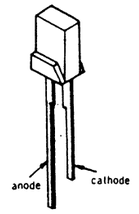
PST520



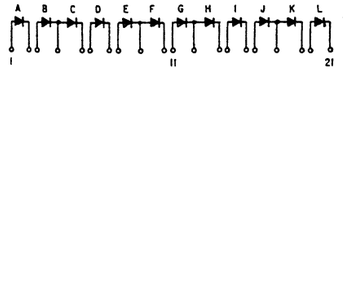
GL112F9



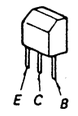
SEL1321G
SEL1121R



RC7805FA (RAYTHEON)
RC7812FA (RAYTHEON)
RC7912FA (RAYTHEON)

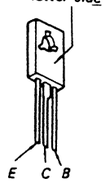


2SD774-34
2SD733-5



2SD998

letter side



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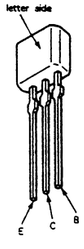
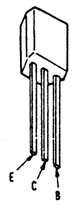
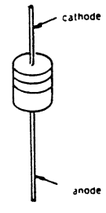


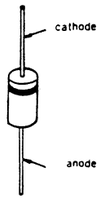
DTC114ES
DTA114ES
2SA1317-STU



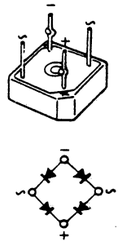
11ES1
1SS119



RD6.2EL2



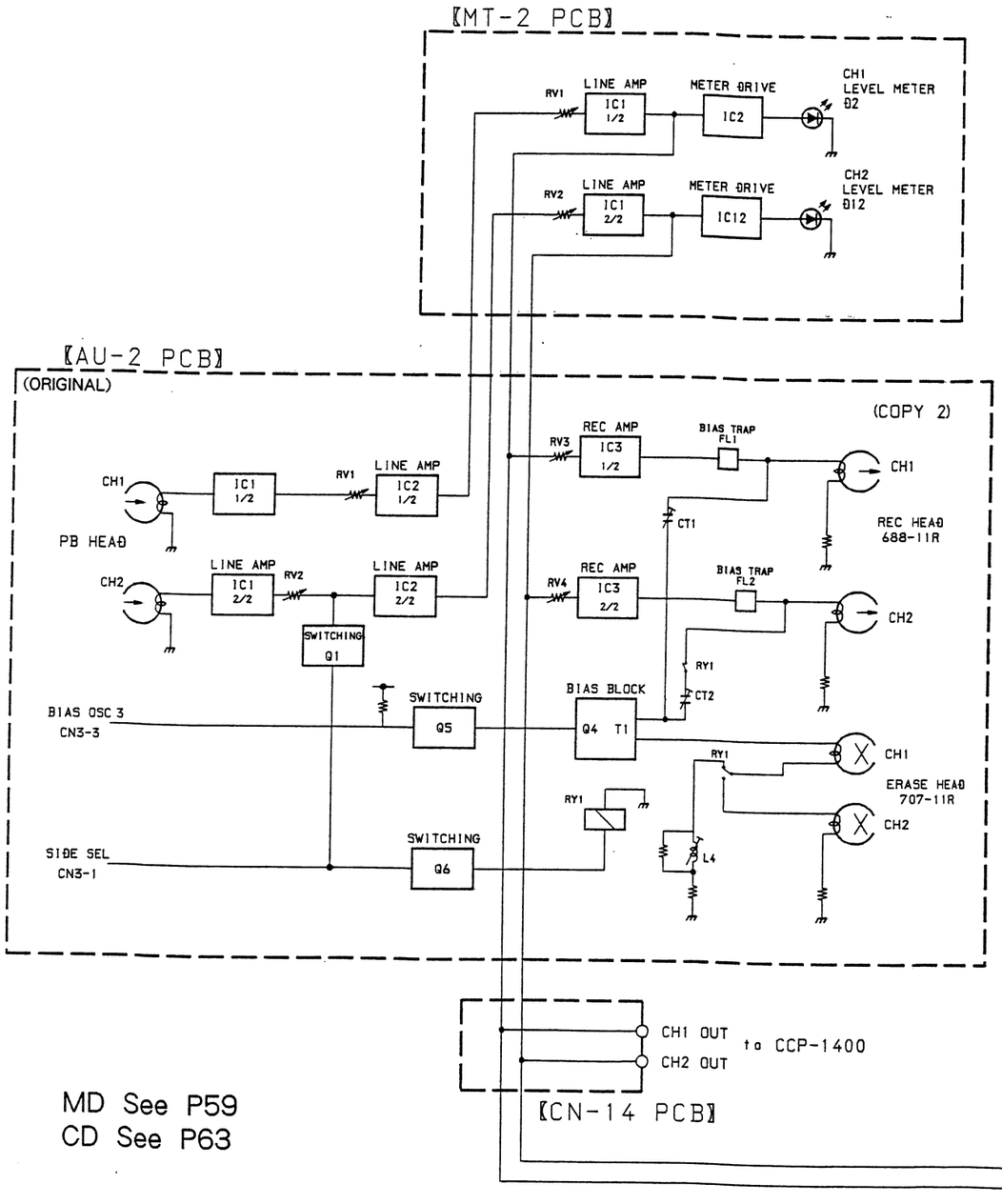
S5VB60

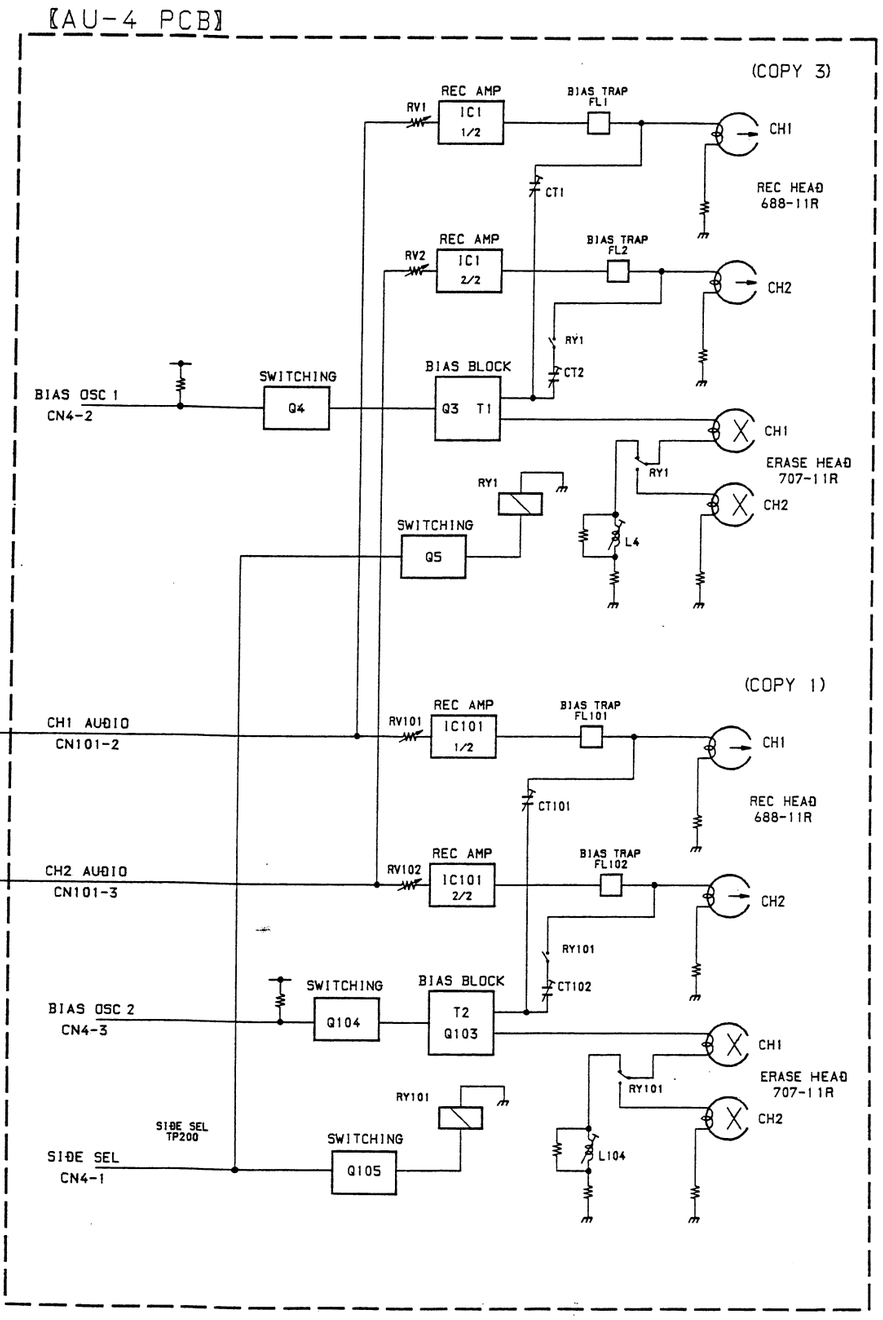


MD See P55
CD See P57

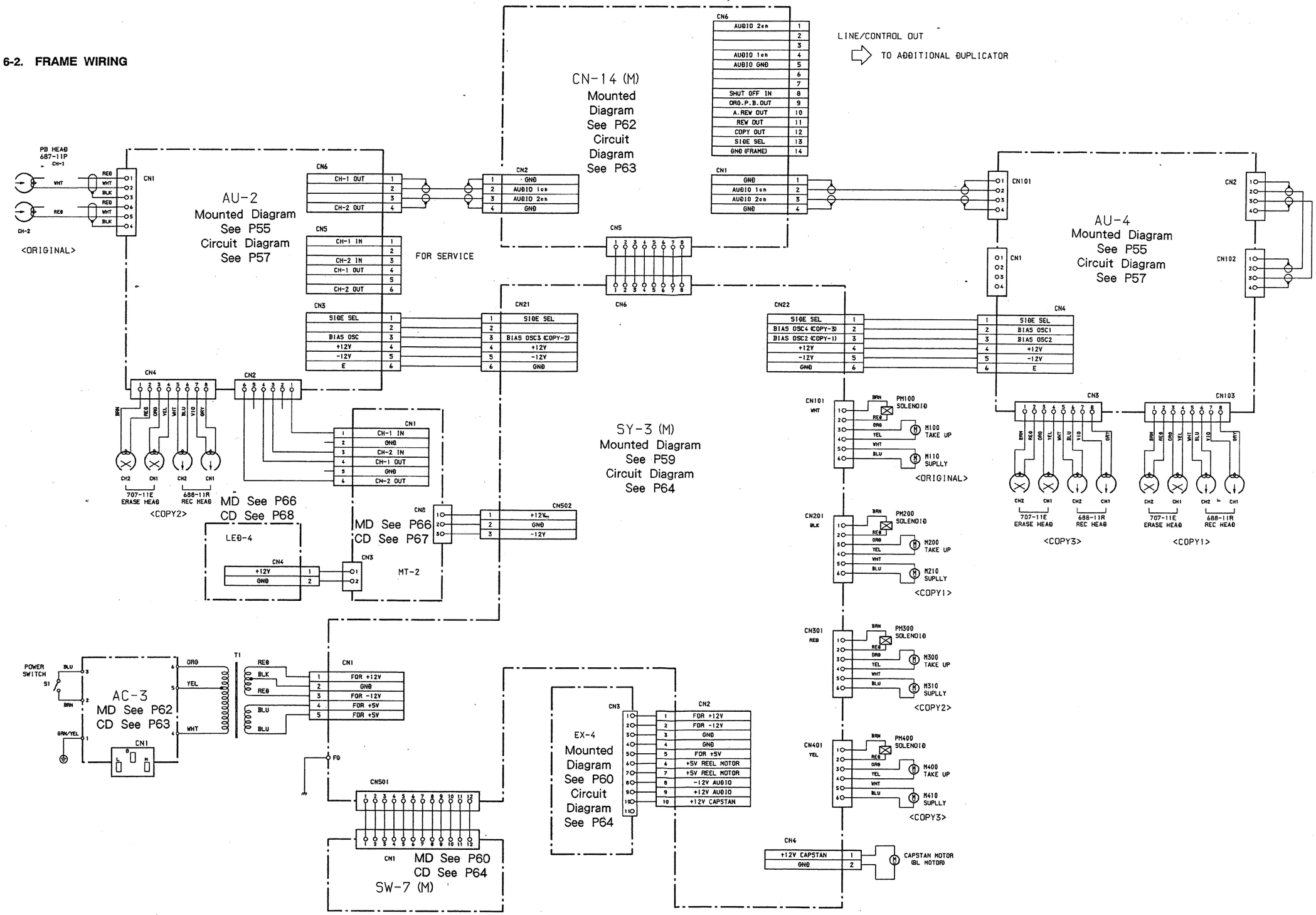
SECTION 6
CCP-1300 DIAGRAMS

6-1. BLOCK DIAGRAM (AUDIO)

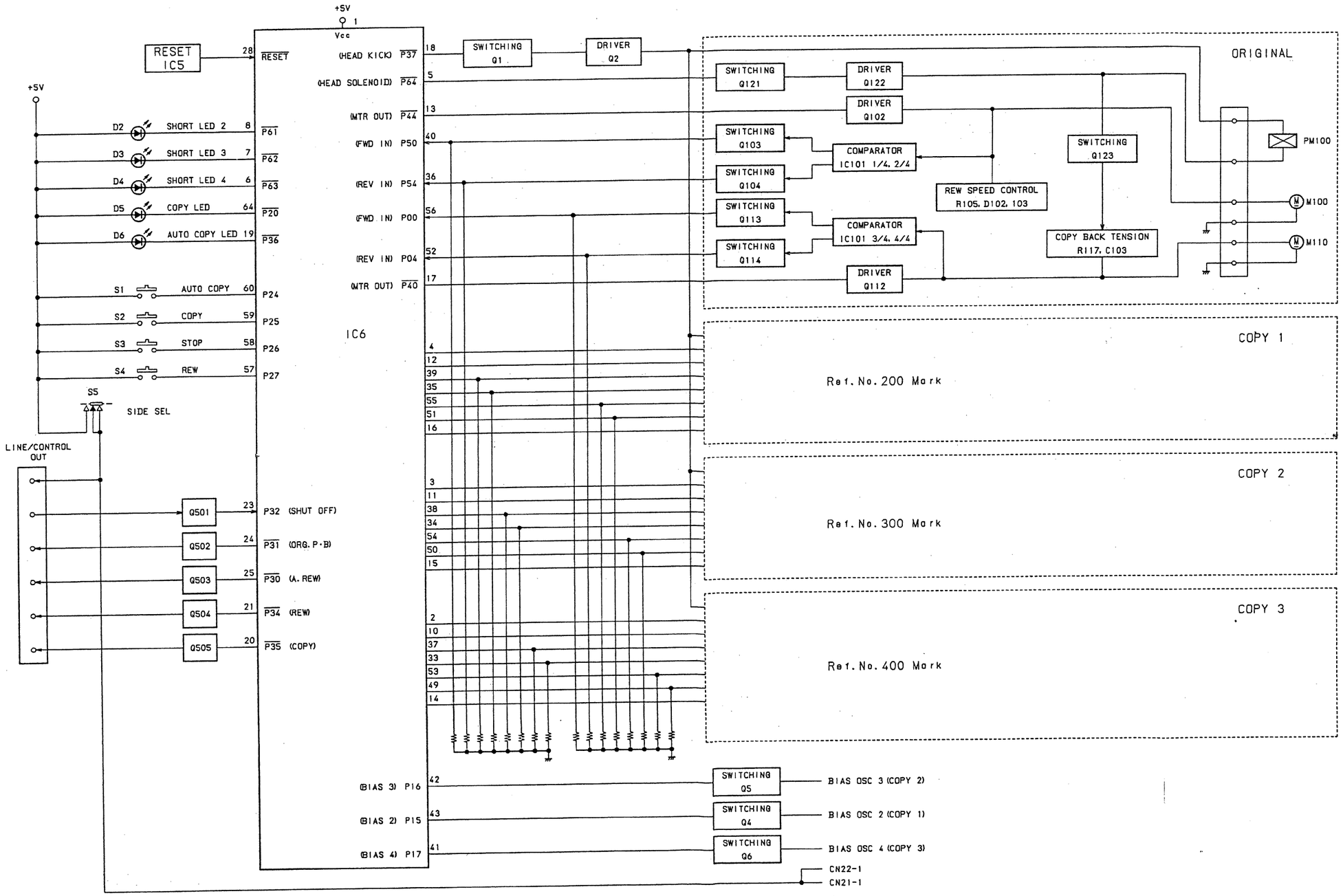




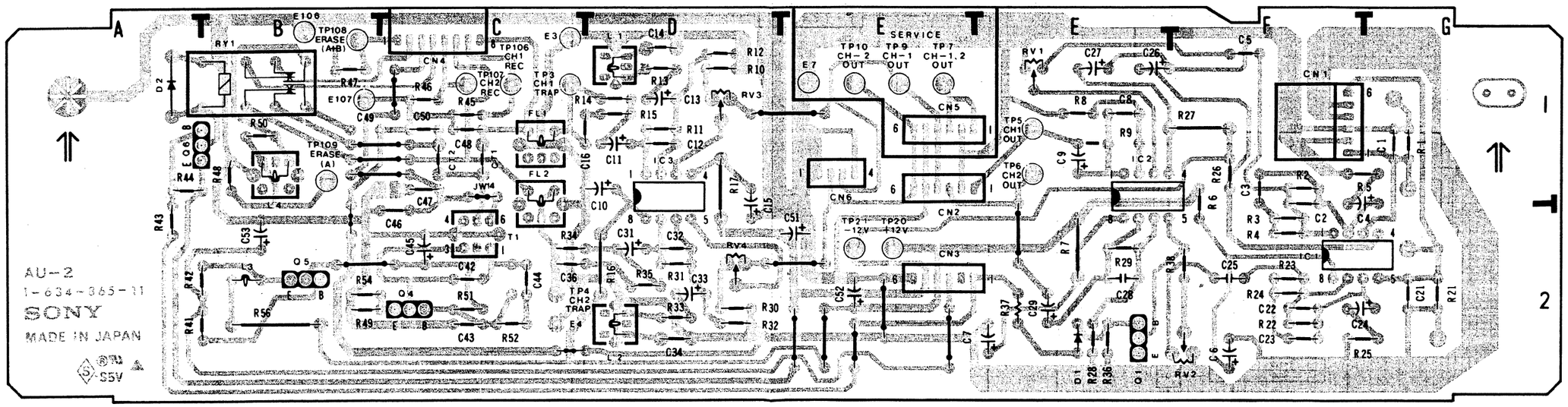
6-2. FRAME WIRING



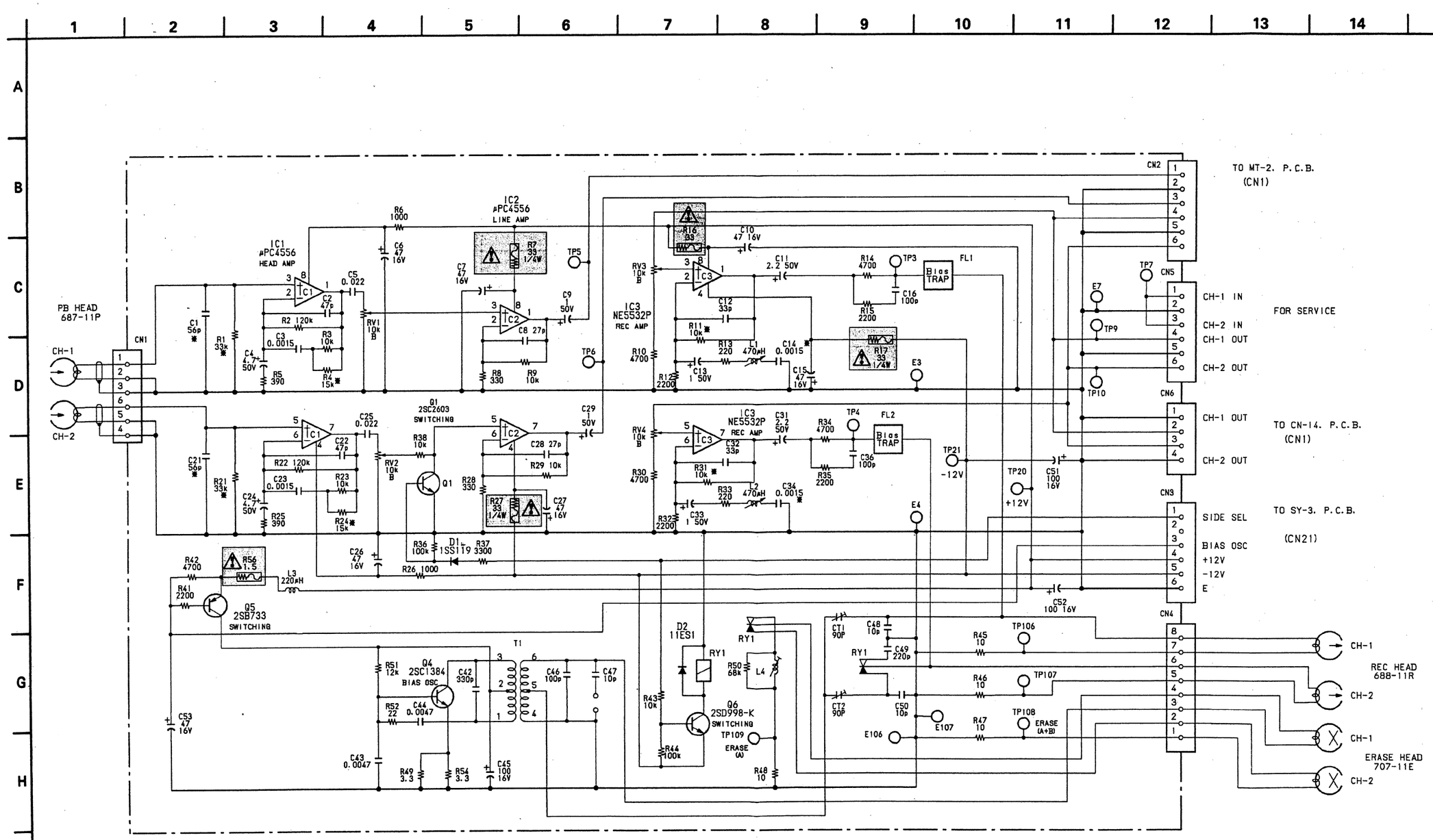
BLOCK DIAGRAM (SYSCON)



6-3. AU-2 BOARD – *Soldering Side* –



PB HEAD
687-11P
CH-1
CH-2

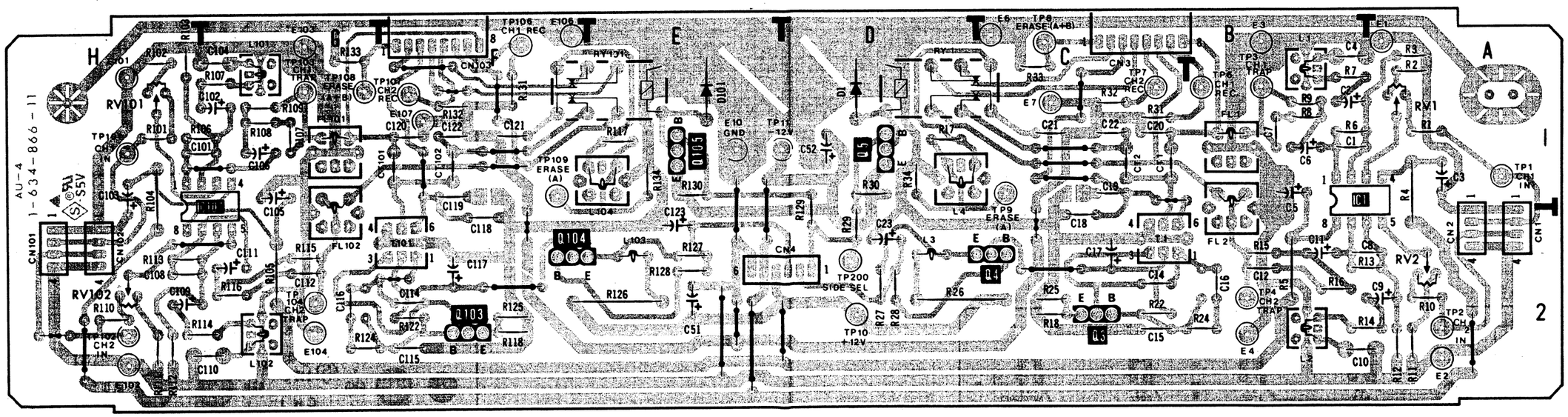


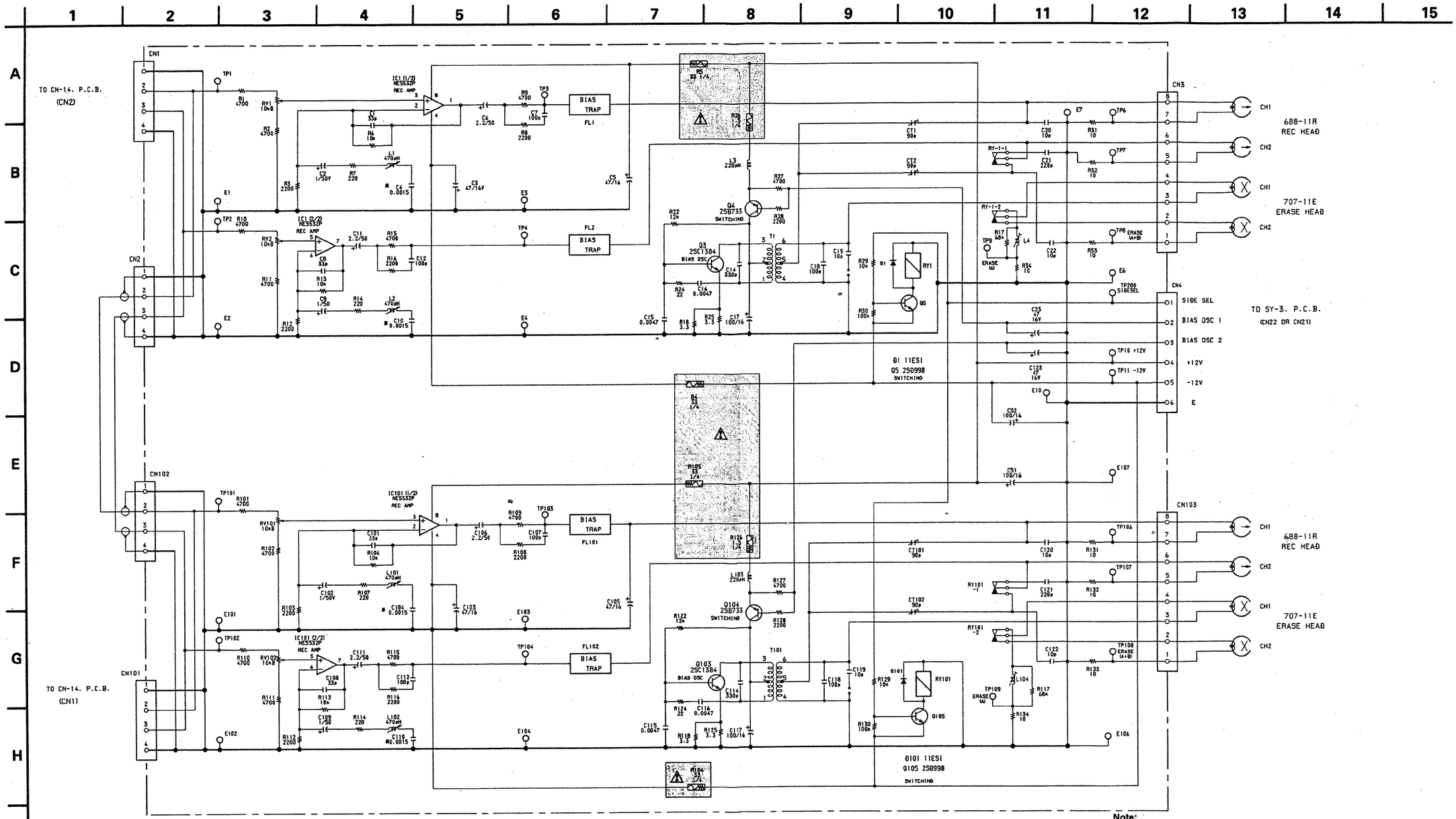
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

6-4. AU-4 BOARD – *Soldering Side* –





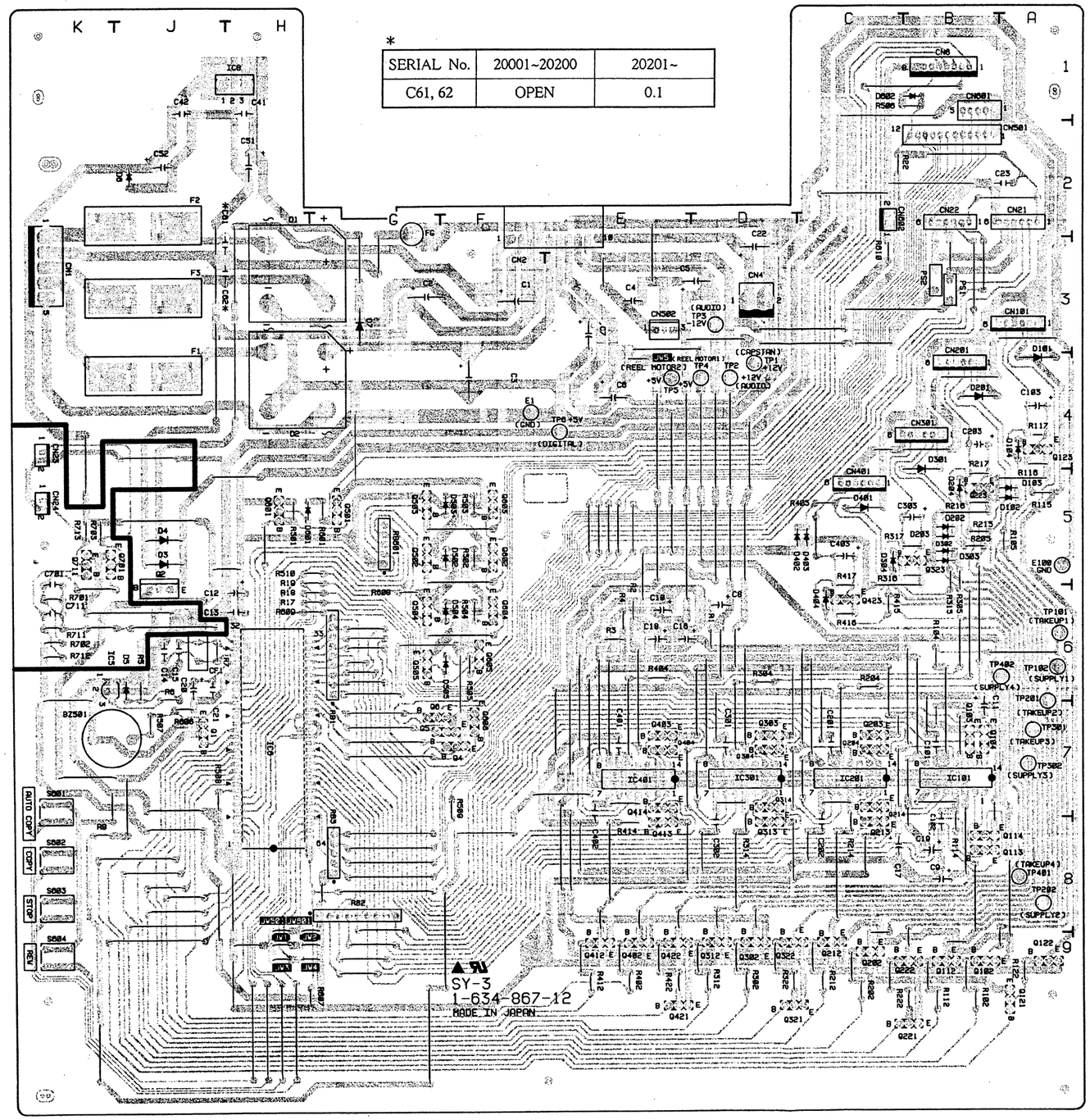
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/8 W or less unless otherwise specified.
- ⚠ : fusible resistor.

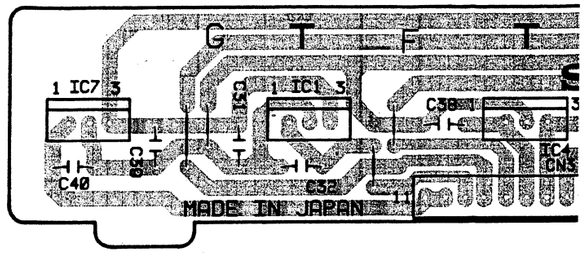
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

6-5. SY-3 (M), EX-4, SW-7 (M), CN-14 (M), AC-3 BOARDS – *Soldering Side* –

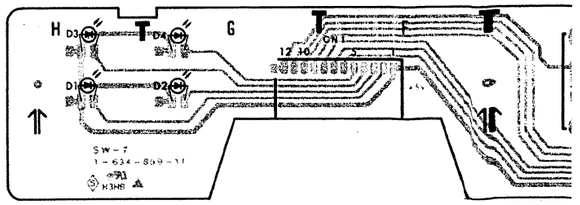
SY-3 (M) BOARD



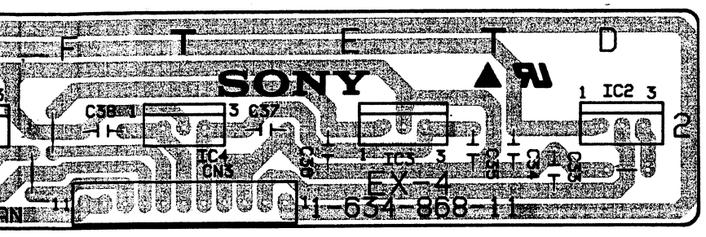
EX-4 BOARD



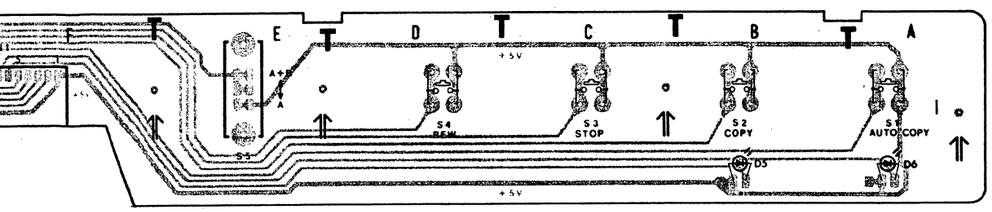
SW-7 (M) BOARD



12

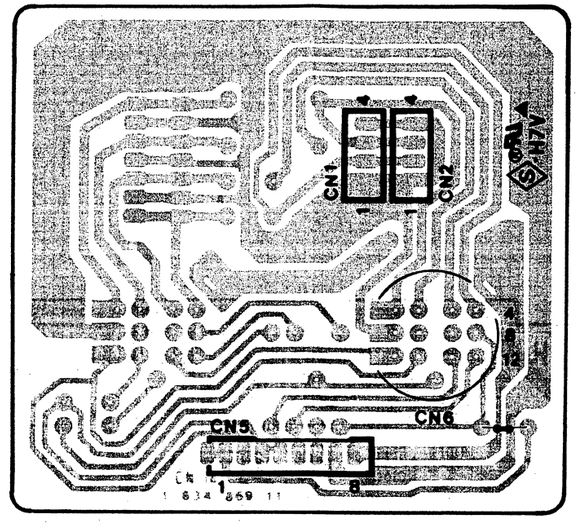


11



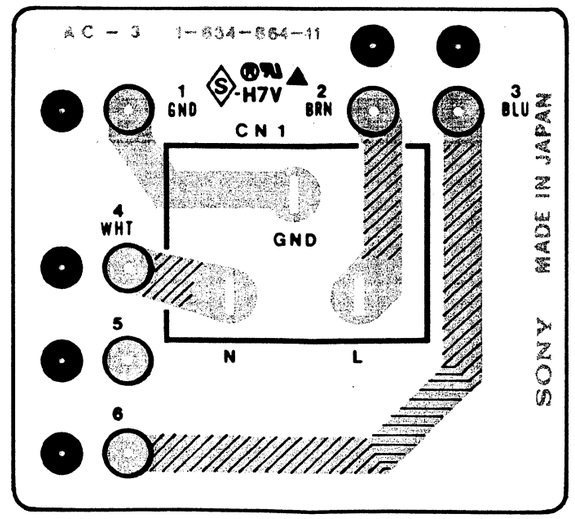
11

CN-14 (M) BOARD

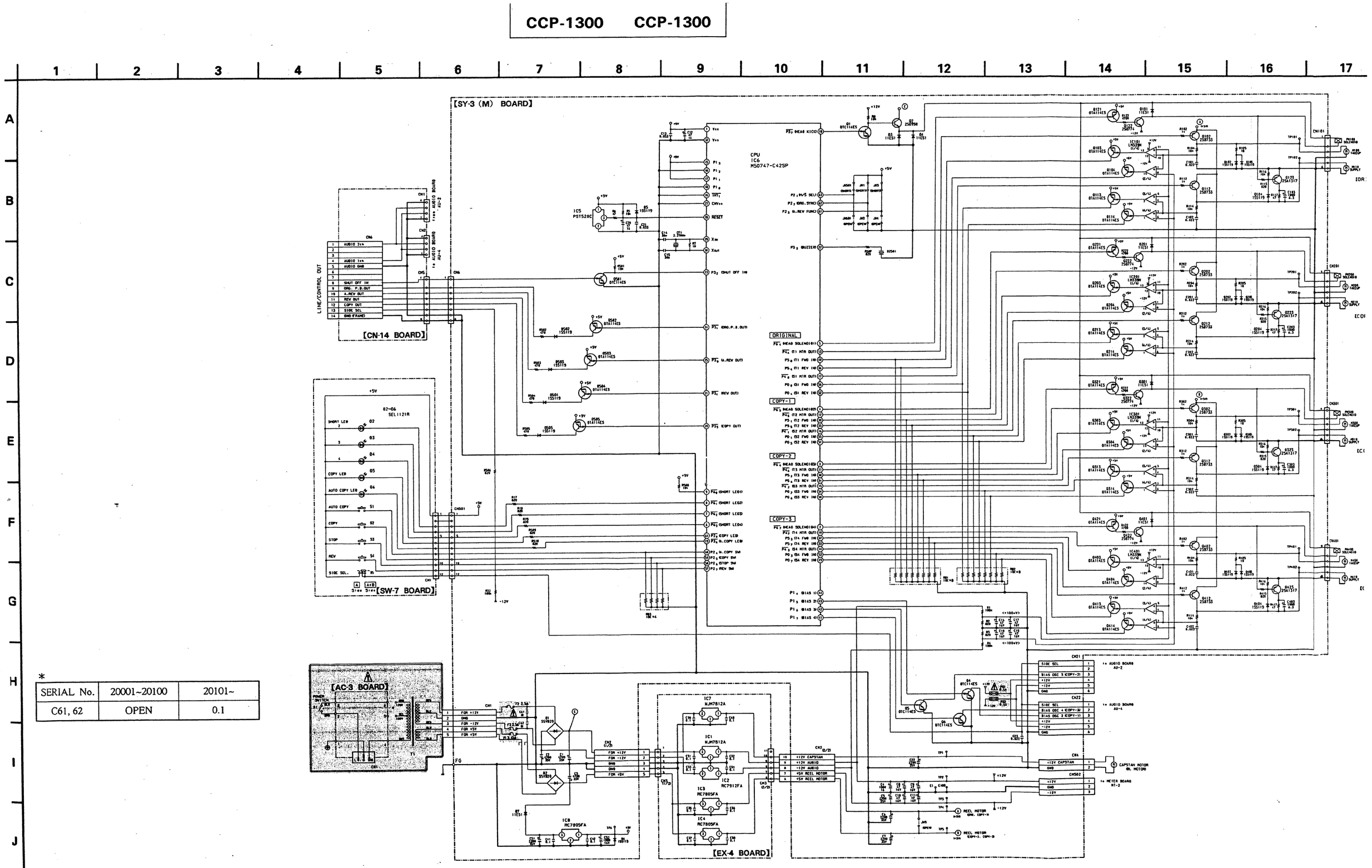


11

AC-3 BOARD

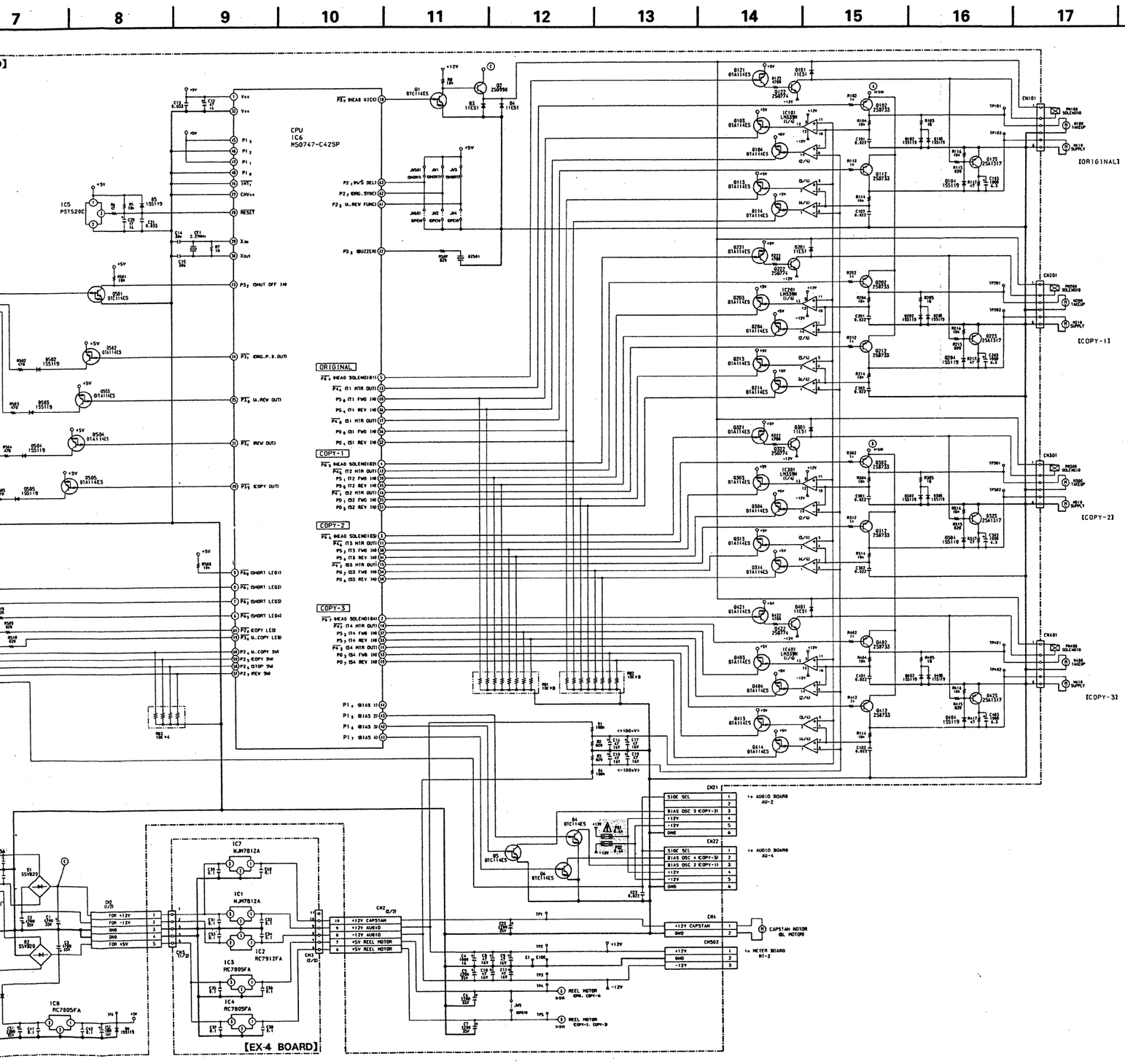


11



*

SERIAL No.	20001~20100	20101~
C61, 62	OPEN	0.1



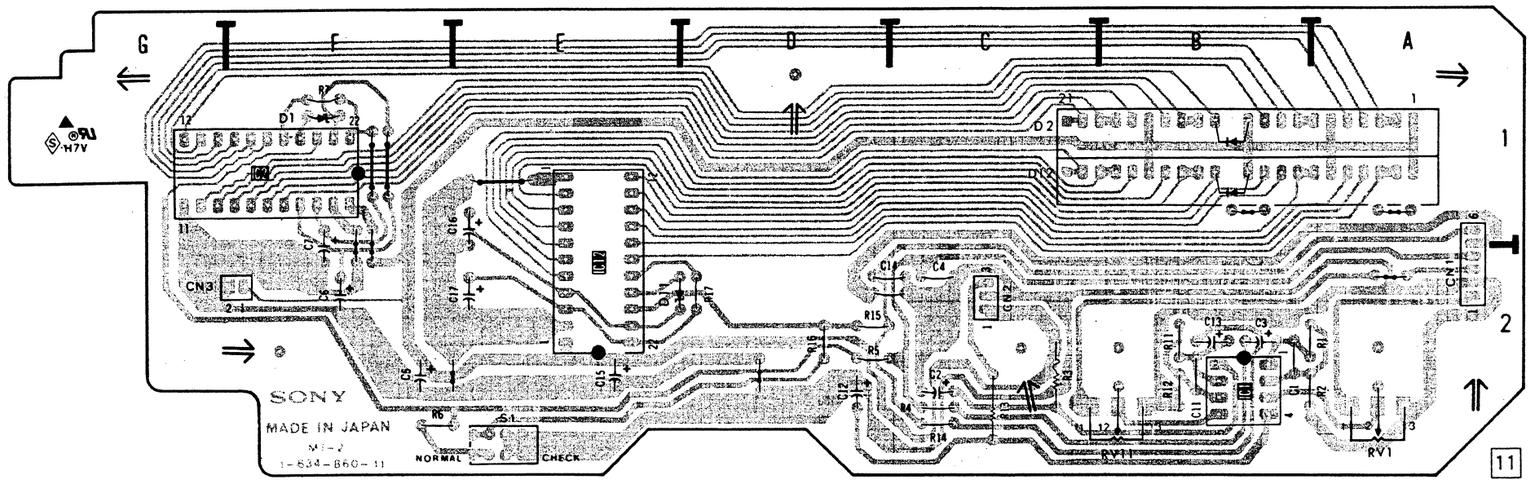
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.

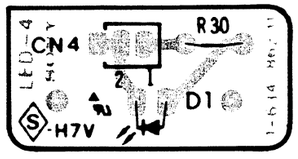
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

6-6. MT-2, LED-4 BOARD – *Soldering Side* –

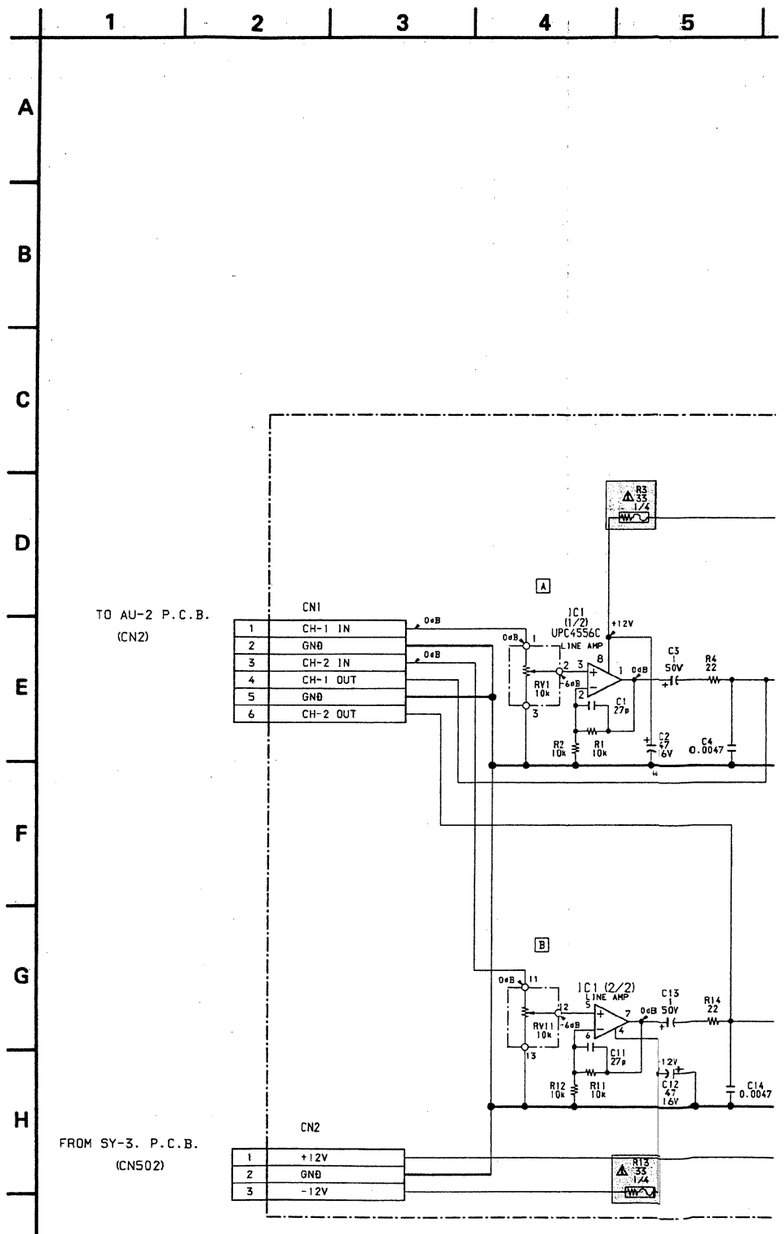
MT-2 BOARD

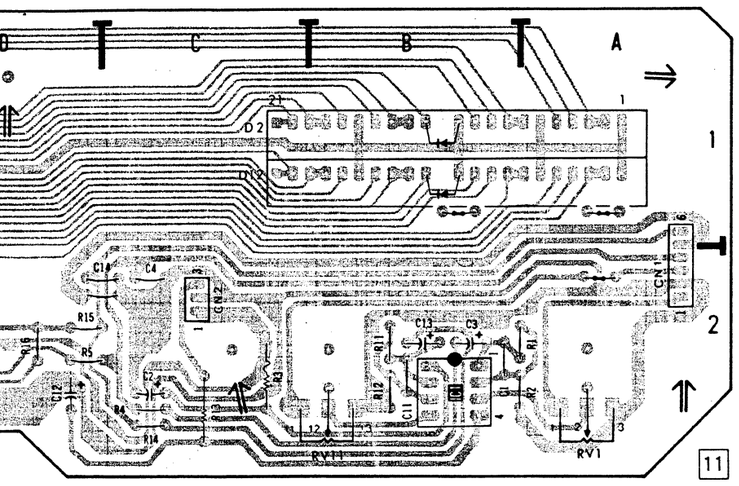


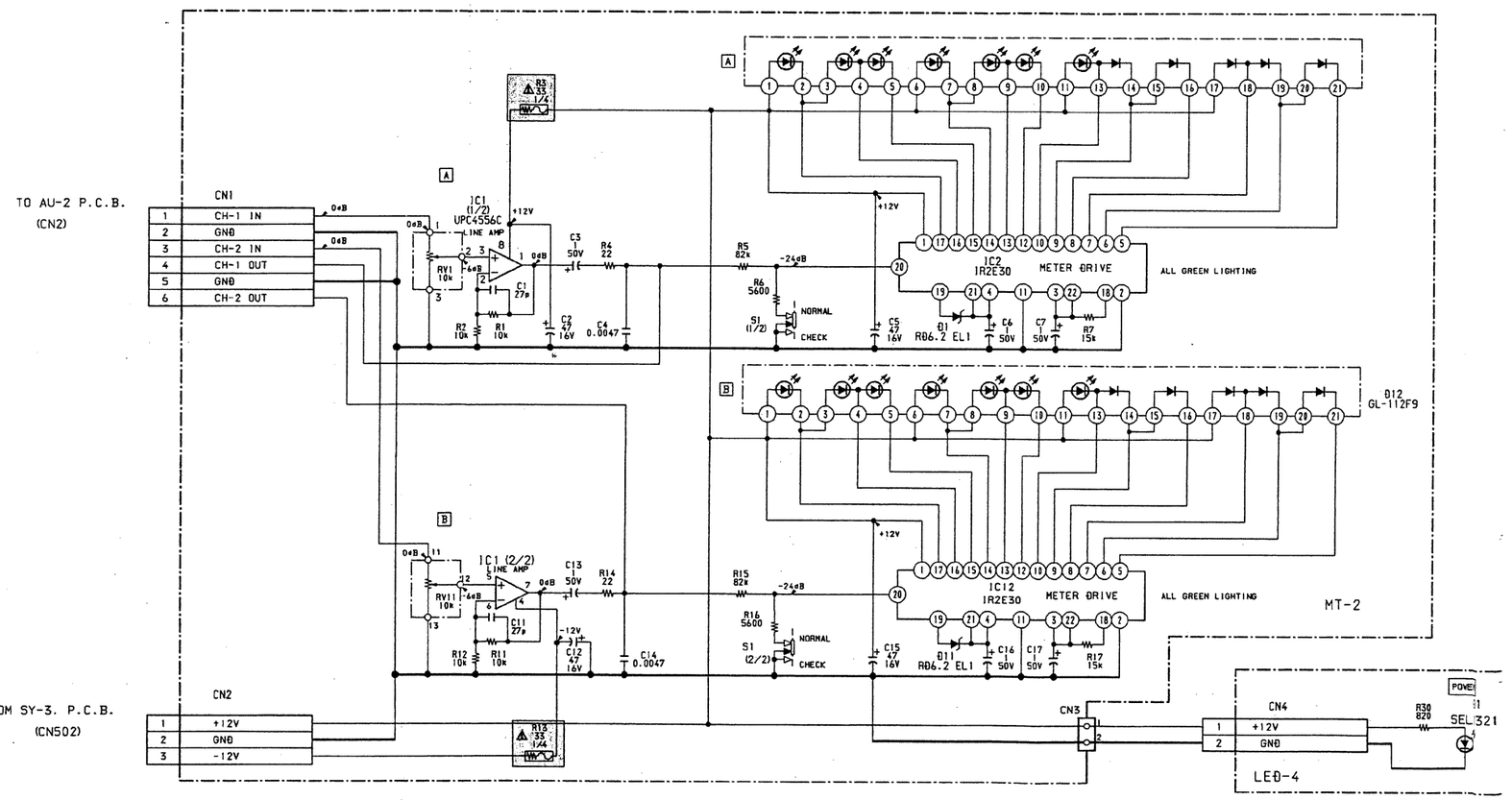
LED-4 BOARD



11





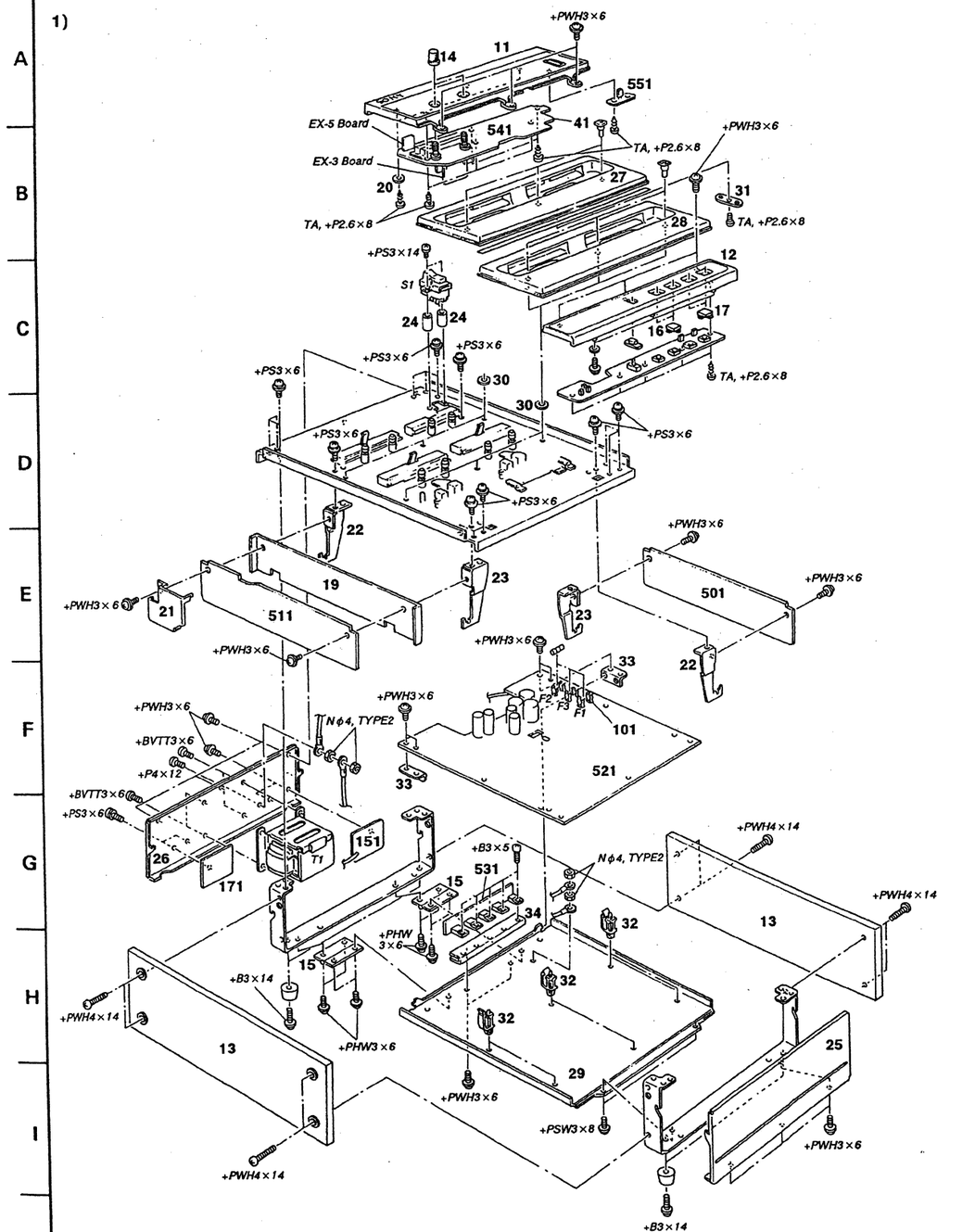


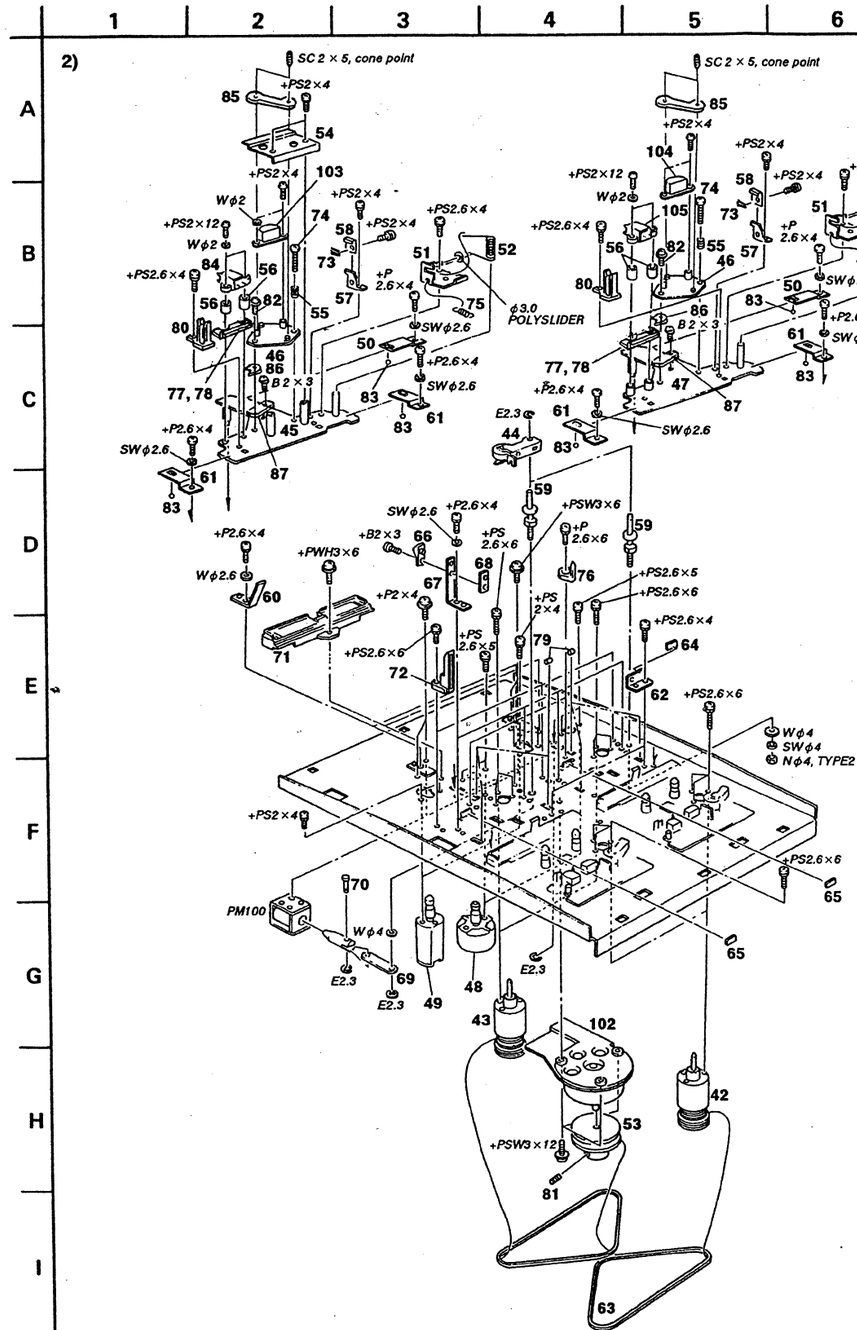
Note:

- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherise specified.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 7
EXPLODED VIEWS



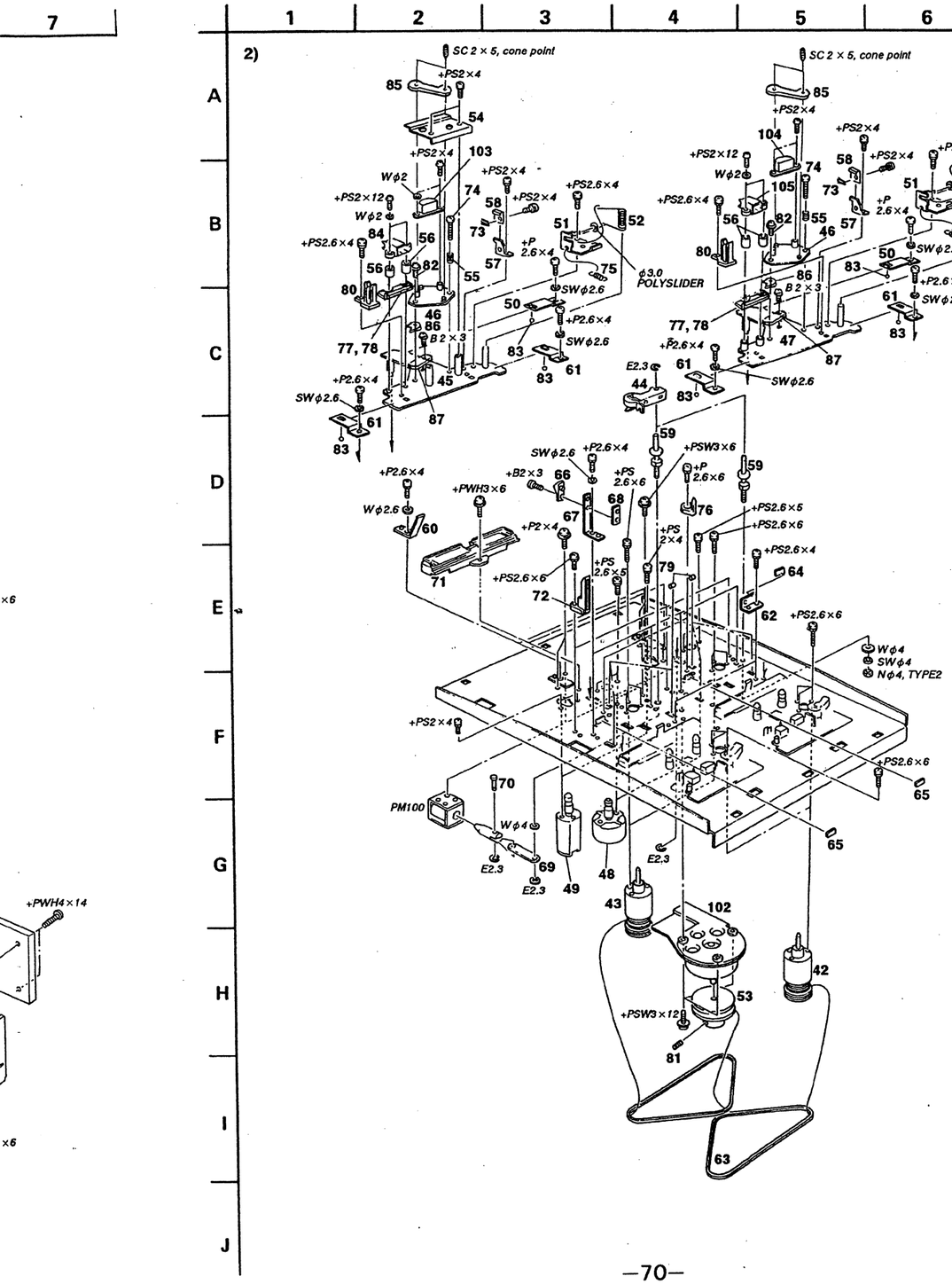


1)

Ref. No.	Part No.
11	*X-3162-34
12	*X-3162-34
13	*X-3162-34
14	X-3668-07
15	*3-151-905
16	3-162-327
17	3-162-327
18	3-162-328
19	*3-162-368
20	3-162-415

2)

Ref. No.	Part No.
1	*A-2029-0
2	*A-2109-0
3	*A-2109-0
4	X-3162-3
5	*X-3162-3
6	*X-3162-3
7	*X-3162-3
8	*X-3162-3
9	*X-3162-3
9	*3-162-31
1	*3-162-34
2	3-162-39
3	3-164-22
4	*3-164-23
5	3-164-23
5	*3-164-23
7	*3-164-23
8	*3-164-23
9	*3-164-23
0	*3-164-23
1	*3-164-23
2	*3-164-23
3	*3-164-23
4	*3-164-23
5	*3-164-23



1)

Ref.No.	Part No.	Description
11	*X-3162-345-1	PANEL ASSY, METER
12	*X-3162-346-1	PANEL ASSY, SWITCH
13	*X-3162-347-1	PLATE ASSY SIDE
14	X-3668-075-0	KNOB ASSY, CONTROL
15	*3-151-905-01	HINGE, DOOR
16	3-162-327-01	BUTTON
17	3-162-327-21	BUTTON
18	3-162-328-01	KNOB
19	*3-162-368-11	SHEET, SHIELD
20	3-162-415-01	WASHER, THRUST
21	*3-162-461-01	PLATE, SHIELD, AUDIO
22	*3-164-239-01	BRACKET (RIGHT), PC BOARD
23	*3-164-240-01	BRACKET (LEFT), PC BOARD
24	*3-164-242-01	SPACER, SWITCH
25	*3-164-261-01	PANEL, FRONT
26	*3-164-262-01	PANEL, REAR
27	*3-164-265-01	PANEL, CASSETTE
28	*3-164-265-11	PANEL, CASSETTE
29	*3-164-266-01	PLATE, BOTTOM
30	3-564-027-01	FELT, LIMITER
31	*3-668-743-00	NUT, PLATE, ROLLER, PRECEDING
32	*3-682-047-01	HOLDER (A), PC BOARD
33	*3-164-251-01	SUPORT, PC BOARD
34	*3-164-252-01	HEAT SINK

2)

Ref.No.	Part No.	Description
41	*A-2029-099-A	MT-2 ASSY
42	*A-2109-009-A	CAPSTAN (B) ASSY
43	*A-2109-010-A	CAPSTAN (A) ASSY
44	X-3162-306-1	PINCH ROLLER ASSY
45	*X-3162-342-1	CHASSIS (P) ASSY, HEAD
46	*X-3162-343-1	PLATE ASSY, ADJUSTMENT, HEAD
47	*X-3162-344-1	CHASSIS (R) ASSY, HEAD
48	*X-3162-348-1	TABLE (RIGHT) ASSY, REEL
49	*X-3162-349-1	TABLE (LEFT) ASSY, REEL
50	*3-162-312-01	SPRING
51	*3-162-345-02	HOOK, SPRING
52	3-162-399-01	SPRING
53	3-164-221-01	PULLEY, MOTOR
54	*3-164-231-01	PLATE, SHIELD, HEAD
55	3-164-232-01	SPRING, COMPRESSION
56	*3-164-233-01	SPACER, ERASE HEAD
57	*3-164-234-01	BRACKET, BRUSH
58	*3-164-235-01	RETAINER, BRUSH
59	*3-164-236-01	SHAFT, PINCH ROLLER
60	*3-164-237-01	SPRING, CASSETTE RETAINER
61	*3-164-238-01	RETAINER (B), HEAD CHASSIS
62	*3-164-241-01	BRACKET, STOPPER
63	*3-164-243-01	BELT, CAPSTAN
64	*3-164-244-01	STOPPER, HEAD CHASSIS
65	*3-164-245-01	CUSHION, CHASSIS
66	*3-164-246-01	RETAINER, CASSETTE
67	3-164-247-01	SPRING, CASSETTE RETAINER
68	*3-164-248-01	RETAINER, CASSETTE
69	*3-164-249-01	PLATE, SOLENOID
70	*3-164-250-01	SHAFT, JOINT
71	*3-164-259-01	CASSETTE, RETAINER
72	3-164-271-01	GUIDE, CASSETTE
73	3-164-272-01	BRUSH, ELECTROSTATIC PREVENTION
74	3-418-191-00	SCREW
75	3-446-154-XX	SPRING, TENSION
76	3-491-131-00	PIN, CASSETTE GUIDE
77	3-166-369-01	PLATE
78	3-166-369-11	PLATE
79	3-558-448-00	ROLLER, HEAD CHASSIS
80	3-576-837-00	CLAMP, LEAD
81	3-701-509-00	SET SCREW, DOUBLE CAP 3×8
82	7-621-770-67	SCREW (M2.6×6), (+) SPECIAL HEAD
83	7-671-154-01	STEEL, BALL
84	8-825-724-00	HEAD, ERASE EF-201-36
85	3-165-188-01	SPACER (1), ADJUSTMENT PLATE
86	*3-165-190-01	SPACER, ADJUSTMENT PLATE (SERIAL NO. 20001～20200)
87	3-165-189-01	SPACER (2), ADJUSTMENT PLATE (SERIAL NO. 20201 HIGHTER)

SECTION 8
ELECTRICAL PARTS LIST

Ref.No.	Part No.	Description	価格 (税別)
		ACCESSORIES	
	X-3701-105-0	ROD ASSY, CLEANING, HEAD	
	△1-557-377-11	CORD, POWER (3 CORE)	
	3-164-273-01	COVER, DUST	
	3-751-805-21	MANUAL, INSTRUCTION	
		ELECTRICAL PARTS	
101	1-533-189-11	HOLDER, FUSE	
102	1-541-747-11	MOTOR, CAPSTAN	
103	1-543-687-11	HEAD, MAGNETIC (PLAYBACK)	
104	1-543-688-11	HEAD, MAGNETIC (RECORD)	
105	1-543-707-11	HEAD, MAGNETIC (ERASE)	
T1	△1-449-928-11	TRANSFORMER, POWER	
S1	△1-570-744-21	SWITCH, AC POWER	
F1	△1-532-745-11	FUSE, GLASS TUBE 3.15A	
F2	△1-532-744-11	FUSE, GLASS TUBE 2.5A	
F3	△1-532-744-11	FUSE, GLASS TUBE 2.5A	
PM100	1-454-495-11	SOLENOID, PLUNGER	
PM200	1-454-495-11	SOLENOID, PLUNGER	
PM300	1-454-495-11	SOLENOID, PLUNGER	
PM400	1-454-495-11	SOLENOID, PLUNGER	
M100	1-541-163-00	MOTOR	
M200	1-541-163-00	MOTOR	
M300	1-541-163-00	MOTOR	
M400	1-541-163-00	MOTOR	
M110	1-541-766-11	MOTOR, DC	
M210	1-541-766-11	MOTOR, DC	
M310	1-541-766-11	MOTOR, DC	
M410	1-541-766-11	MOTOR, DC	
	1-558-070-11	LEAD (WITH CONNECTOR) 6P	
	1-558-071-11	LEAD (WITH CONNECTOR) 8P	

AU-4 BOARD

501	*A-2006-280-A	MOUNTED PCB, AU-4			
C1	1-102-963-00	CERAMIC	33PF	5%	50V
C2	1-124-438-00	ELECT	1MF	20%	50V
C3	1-124-589-11	ELECT	47MF	20%	16V
C4	1-130-473-00	MYLAR	0.0015MF	5%	50V
C5	1-124-589-11	ELECT	47MF	20%	16V
C6	1-124-257-00	ELECT	2.2MF	20%	50V
C7	1-102-973-00	CERAMIC	100PF	5%	50V
C8	1-107-963-00	CERAMIC	33PF	5%	50V
C9	1-124-438-00	ELECT	1MF	20%	50V
C10	1-130-473-00	MYLAR	0.0015MF	5%	50V
C11	1-124-257-00	ELECT	2.2MF	20%	50V
C12	1-102-973-00	CERAMIC	100PF	5%	50V
C14	1-130-012-00	FILM	330PF	5%	50V
C15	1-130-479-00	MYLAR	0.0047MF	5%	50V
C16	1-130-479-00	MYLAR	0.0047MF	5%	50V
C17	1-123-333-00	ELECT	100MF	20%	16V
C18	1-136-433-11	FILM	100PF	5%	630V
C19	1-107-202-00	MICA	10PF	10%	500V
C20	1-107-202-00	MICA	10PF	10%	500V
C21	1-109-621-00	MICA	220PF	5%	500V
C22	1-107-202-00	MICA	10PF	10%	500V
C23	1-124-589-11	ELECT	47MF	20%	16V
C51	1-123-333-00	ELECT	100MF	20%	16V
C52	1-123-333-00	ELECT	100MF	20%	16V
C101	1-102-963-00	CERAMIC	33PF	5%	50V
C102	1-124-438-00	ELECT	1MF	20%	50V
C103	1-124-589-11	ELECT	47MF	20%	16V
C104	1-130-473-00	MYLAR	0.0015MF	5%	50V
C105	1-124-589-11	ELECT	47MF	20%	16V
C106	1-124-257-00	ELECT	2.2MF	20%	50V
C107	1-102-973-00	CERAMIC	100PF	5%	50V
C108	1-102-963-00	CERAMIC	33PF	5%	50V
C109	1-124-438-00	ELECT	1MF	20%	50V
C110	1-130-473-00	MYLAR	0.0015MF	5%	50V
C111	1-124-257-00	ELECT	2.2MF	20%	50V
C112	1-102-973-00	CERAMIC	100PF	5%	50V
C114	1-130-012-00	FILM	330PF	5%	50V
C115	1-130-479-00	MYLAR	0.0047MF	5%	50V
C116	1-130-479-00	MYLAR	0.0047MF	5%	50V
C117	1-123-333-00	ELECT	100MF	20%	16V
C118	1-136-433-11	FILM	100PF	5%	630V
C119	1-107-202-00	MICA	10PF	10%	500V
C120	1-107-202-00	MICA	10PF	10%	500V
C121	1-109-621-00	MICA	220PF	5%	500V
C122	1-107-202-00	MICA	10PF	10%	500V
C123	1-124-589-11	ELECT	47MF	20%	16V
CN1	*1-560-467-00	PIN, CONNECTOR 4P			
CN2	*1-575-762-11	CABLE, CONNECTION			
CN3	*1-560-463-00	PIN, CONNECTOR 8P			
CN4	*1-560-469-00	PIN, CONNECTOR 6P			
CN101	*1-560-467-00	PIN, CONNECTOR 4P			
CN103	*1-560-463-00	PIN, CONNECTOR 8P			
CT1	1-141-297-11	TRIMMER, CERAMIC			
CT2	1-141-297-11	TRIMMER, CERAMIC			
CT101	1-141-297-11	TRIMMER, CERAMIC			
CT102	1-141-297-11	TRIMMER, CERAMIC			

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts wihe part numbers (△-△△△-△△△-XX or △-△△△-△△△-X) may be different from those used in the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

- SEMICONDUCTORS
  In each case, U : μ, for example :
  UA ··· : μA ···, UPA··· : μPA···,
  UPC··· : μPC···, UPD··· : μPD···
- RESISTORS
  - ALL resistors are in ohms.
  - F : nonflammable
- CAPACITORS
  MF : μF, PF : μμF

The components identified by shading and mark are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description			
D1	8-719-200-81	DIODE 1IES1			
D101	8-719-200-81	DIODE 1IES1			
FL1	1-409-406-11	COIL, BIAS TRAP			
FL2	1-409-406-11	COIL, BIAS TRAP			
FL101	1-409-406-11	COIL, BIAS TRAP			
FL102	1-409-406-11	COIL, BIAS TRAP			
IC1	8-759-900-72	IC NE5532P			
IC101	8-759-900-72	IC NE5532P			
L1	1-410-310-11	COIL, VARIABLE			
L2	1-410-310-11	COIL, VARIABLE			
L3	1-410-311-11	COIL (SHIELD TYPE)			
L4	1-424-371-11	COIL			
L101	1-410-310-11	COIL, VARIABLE			
L102	1-410-310-11	COIL, VARIABLE			
L103	1-410-311-11	COIL (SHIELD TYPE)			
L104	1-424-371-11	COIL			
Q3	8-729-140-96	TRANSISTOR 2SC1384			
Q4	8-729-119-76	TRANSISTOR 2SB733-34			
Q5	8-729-199-82	TRANSISTOR 2SD998-K			
Q103	8-729-140-96	TRANSISTOR 2SC1384			
Q104	8-729-119-76	TRANSISTOR 2SB733-34			
Q105	8-729-199-82	TRANSISTOR 2SD998-K			
R1	1-249-425-11	CARBON	4.7K	5%	1/4W
R2	1-249-425-11	CARBON	4.7K	5%	1/4W
R3	1-249-421-11	CARBON	2.2K	5%	1/4W
R4	△1-212-869-00	FUSIBLE	33	5%	1/4W F
R5	△1-212-869-00	FUSIBLE	33	5%	1/4W F
R6	1-249-429-11	CARBON	10K	5%	1/4W
R7	1-249-409-11	CARBON	220	5%	1/4W
R8	1-249-421-11	CARBON	2.2K	5%	1/4W
R9	1-249-425-11	CARBON	4.7K	5%	1/4W
R10	1-249-425-11	CARBON	4.7K	5%	1/4W
R11	1-249-425-11	CARBON	4.7K	5%	1/4W
R12	1-249-421-11	CARBON	2.2K	5%	1/4W
R13	1-249-429-11	CARBON	10K	5%	1/4W
R14	1-249-409-11	CARBON	220	5%	1/4W
R15	1-249-425-11	CARBON	4.7K	5%	1/4W
R16	1-249-421-11	CARBON	2.2K	5%	1/4W
R17	1-249-439-11	CARBON	68K	5%	1/4W
R18	1-249-387-11	CARBON	3.3	5%	1/4W
R22	1-249-430-11	CARBON	12K	5%	1/4W
R24	1-249-397-11	CARBON	22	5%	1/4W
R25	1-249-387-11	CARBON	3.3	5%	1/4W
R26	△1-217-638-00	FUSIBLE	1.5	5%	1/4W F
R27	1-249-425-11	CARBON	4.7K	5%	1/4W
R28	1-249-421-11	CARBON	2.2K	5%	1/4W
R29	1-249-429-11	CARBON	10K	5%	1/4W
R30	1-249-441-11	CARBON	100K	5%	1/4W
R31	1-249-393-11	CARBON	10	5%	1/4W
R32	1-249-393-11	CARBON	10	5%	1/4W
R33	1-249-393-11	CARBON	10	5%	1/4W
R34	1-249-393-11	CARBON	10	5%	1/4W

Ref.No.	Part No.	Description			
R101	1-249-425-11	CARBON	4.7K	5%	1/4W
R102	1-249-425-11	CARBON	4.7K	5%	1/4W
R103	1-249-421-11	CARBON	2.2K	5%	1/4W
R104	△1-212-869-00	FUSIBLE	33	5%	1/4W F
R105	△1-212-869-00	FUSIBLE	33	5%	1/4W F
R106	1-249-429-11	CARBON	10K	5%	1/4W
R107	1-249-409-11	CARBON	220	5%	1/4W
R108	1-249-421-11	CARBON	2.2K	5%	1/4W
R109	1-249-425-11	CARBON	4.7K	5%	1/4W
R110	1-249-425-11	CARBON	4.7K	5%	1/4W
R111	1-249-425-11	CARBON	4.7K	5%	1/4W
R112	1-249-421-11	CARBON	2.2K	5%	1/4W
R113	1-249-429-11	CARBON	10K	5%	1/4W
R114	1-249-409-11	CARBON	220	5%	1/4W
R115	1-249-425-11	CARBON	4.7K	5%	1/4W
R116	1-249-421-11	CARBON	2.2K	5%	1/4W
R117	1-249-439-11	CARBON	68K	5%	1/4W
R118	1-249-387-11	CARBON	3.3	5%	1/4W
R122	1-249-430-11	CARBON	12K	5%	1/4W
R124	1-249-397-11	CARBON	22	5%	1/4W
R125	1-249-387-11	CARBON	3.3	5%	1/4W
R126	△1-217-638-00	FUSIBLE	1.5	5%	1/4W F
R127	1-249-425-11	CARBON	4.7K	5%	1/4W
R128	1-249-421-11	CARBON	2.2K	5%	1/4W
R129	1-249-429-11	CARBON	10K	5%	1/4W
R130	1-249-441-11	CARBON	100K	5%	1/4W
R131	1-249-393-11	CARBON	10	5%	1/4W
R132	1-249-393-11	CARBON	10	5%	1/4W
R133	1-249-393-11	CARBON	10	5%	1/4W
R134	1-249-393-11	CARBON	10	5%	1/4W
RV1	1-230-523-11	RES, ADJ, SOLID 10K			
RV2	1-230-523-11	RES, ADJ, SOLID 10K			
RV101	1-230-523-11	RES, ADJ, SOLID 10K			
RV102	1-230-523-11	RES, ADJ, SOLID 10K			
RY1	1-515-683-11	RELAY			
RY101	1-515-683-11	RELAY			
T1	1-433-368-11	TRANSFORMER, BIAS OSCILLATION			
T101	1-433-368-11	TRANSFORMER, BIAS OSCILLATION			

AU-2 BOARD

511	*A-2010-304-A	MOUNTTED PCB, AU-2			
C1	1-101-884-00	CERAMIC	56PF	5%	50V
C2	1-101-880-00	CERAMIC	47PF	5%	50V
C3	1-130-473-00	MYLAR	0.0015MF	5%	50V
C4	1-126-163-11	ELECT	4.7MF	20%	50V
C5	1-130-487-00	MYLAR	0.022MF	5%	50V
C6	1-124-589-11	ELECT	47MF	20%	16V
C7	1-124-589-11	ELECT	47MF	20%	16V
C8	1-102-961-00	CERAMIC	27PF	5%	50V
C9	1-124-438-00	ELECT	1MF	20%	50V
C10	1-124-589-11	ELECT	47MF	20%	16V

Ref.No

C11
C12
C13
C14
C15
C16
C21
C22
C23
C24
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C26
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C28
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C31
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C34
C36
C42
C43
C44
C45
C46
C47
C48
C49
C50
C51
C52
C53
CN1
CN2
CN3
CN4
CN5
CN6
CT1
CT2
D1
D2
FL1
FL2
IC1
IC2
IC3
L1
L2
L3
L4
Q1
Q4
Q5
Q6

20%	50V				
5%	50V				
5%	50V				
5%	50V				
5%	50V				
20%	16V				
5%	630V				
10%	500V				
10%	500V				
5%	500V				
10%	500V				
20%	16V				
20%	16V				
20%	16V				
5%	50V				
20%	50V				
20%	16V				
5%	50V				
20%	16V				
5%	50V				
5%	50V				
20%	50V				
5%	50V				
5%	50V				
5%	50V				
5%	50V				
20%	16V				
5%	630V				
10%	500V				
10%	500V				
5%	500V				
10%	500V				
20%	16V				

Ref.No.	Part No.	Description			
D1	8-719-200-81	DIODE 11ES1			
D101	8-719-200-81	DIODE 11ES1			
FL1	1-409-406-11	COIL,BIAS TRAP			
FL2	1-409-406-11	COIL,BIAS TRAP			
FL101	1-409-406-11	COIL,BIAS TRAP			
FL102	1-409-406-11	COIL,BIAS TRAP			
IC1	8-759-900-72	IC NE5532P			
IC101	8-759-900-72	IC NE5532P			
L1	1-410-310-11	COIL,VARIABLE			
L2	1-410-310-11	COIL,VARIABLE			
L3	1-410-311-11	COIL (SHIELD TYPE)			
L4	1-424-371-11	COIL			
L101	1-410-310-11	COIL,VARIABLE			
L102	1-410-310-11	COIL,VARIABLE			
L103	1-410-311-11	COIL (SHIELD TYPE)			
L104	1-424-371-11	COIL			
Q3	8-729-140-96	TRANSISTOR 2SC1384			
Q4	8-729-119-76	TRANSISTOR 2SB733-34			
Q5	8-729-199-82	TRANSISTOR 2SD998-K			
Q103	8-729-140-96	TRANSISTOR 2SC1384			
Q104	8-729-119-76	TRANSISTOR 2SB733-34			
Q105	8-729-199-82	TRANSISTOR 2SD998-K			
R1	1-249-425-11	CARBON	4.7K	5%	1/4W
R2	1-249-425-11	CARBON	4.7K	5%	1/4W
R3	1-249-421-11	CARBON	2.2K	5%	1/4W
R4	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R5	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R6	1-249-429-11	CARBON	10K	5%	1/4W
R7	1-249-409-11	CARBON	220	5%	1/4W
R8	1-249-421-11	CARBON	2.2K	5%	1/4W
R9	1-249-425-11	CARBON	4.7K	5%	1/4W
R10	1-249-425-11	CARBON	4.7K	5%	1/4W
R11	1-249-425-11	CARBON	4.7K	5%	1/4W
R12	1-249-421-11	CARBON	2.2K	5%	1/4W
R13	1-249-429-11	CARBON	10K	5%	1/4W
R14	1-249-409-11	CARBON	220	5%	1/4W
R15	1-249-425-11	CARBON	4.7K	5%	1/4W
R16	1-249-421-11	CARBON	2.2K	5%	1/4W
R17	1-249-439-11	CARBON	68K	5%	1/4W
R18	1-249-387-11	CARBON	3.3	5%	1/4W
R22	1-249-430-11	CARBON	12K	5%	1/4W
R24	1-249-397-11	CARBON	22	5%	1/4W
R25	1-249-387-11	CARBON	3.3	5%	1/4W
R26	⚠1-217-638-00	FUSIBLE	1.5	5%	1/4W F
R27	1-249-425-11	CARBON	4.7K	5%	1/4W
R28	1-249-421-11	CARBON	2.2K	5%	1/4W
R29	1-249-429-11	CARBON	10K	5%	1/4W
R30	1-249-441-11	CARBON	100K	5%	1/4W
R31	1-249-393-11	CARBON	10	5%	1/4W
R32	1-249-393-11	CARBON	10	5%	1/4W
R33	1-249-393-11	CARBON	10	5%	1/4W
R34	1-249-393-11	CARBON	10	5%	1/4W

Ref.No.	Part No.	Description			
R101	1-249-425-11	CARBON	4.7K	5%	1/4W
R102	1-249-425-11	CARBON	4.7K	5%	1/4W
R103	1-249-421-11	CARBON	2.2K	5%	1/4W
R104	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R105	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R106	1-249-429-11	CARBON	10K	5%	1/4W
R107	1-249-409-11	CARBON	220	5%	1/4W
R108	1-249-421-11	CARBON	2.2K	5%	1/4W
R109	1-249-425-11	CARBON	4.7K	5%	1/4W
R110	1-249-425-11	CARBON	4.7K	5%	1/4W
R111	1-249-425-11	CARBON	4.7K	5%	1/4W
R112	1-249-421-11	CARBON	2.2K	5%	1/4W
R113	1-249-429-11	CARBON	10K	5%	1/4W
R114	1-249-409-11	CARBON	220	5%	1/4W
R115	1-249-425-11	CARBON	4.7K	5%	1/4W
R116	1-249-421-11	CARBON	2.2K	5%	1/4W
R117	1-249-439-11	CARBON	68K	5%	1/4W
R118	1-249-387-11	CARBON	3.3	5%	1/4W
R122	1-249-430-11	CARBON	12K	5%	1/4W
R124	1-249-397-11	CARBON	22	5%	1/4W
R125	1-249-387-11	CARBON	3.3	5%	1/4W
R126	⚠1-217-638-00	FUSIBLE	1.5	5%	1/4W F
R127	1-249-425-11	CARBON	4.7K	5%	1/4W
R128	1-249-421-11	CARBON	2.2K	5%	1/4W
R129	1-249-429-11	CARBON	10K	5%	1/4W
R130	1-249-441-11	CARBON	100K	5%	1/4W
R131	1-249-393-11	CARBON	10	5%	1/4W
R132	1-249-393-11	CARBON	10	5%	1/4W
R133	1-249-393-11	CARBON	10	5%	1/4W
R134	1-249-393-11	CARBON	10	5%	1/4W
RV1	1-230-523-11	RES,ADJ,SOLID 10K			
RV2	1-230-523-11	RES,ADJ,SOLID 10K			
RV101	1-230-523-11	RES,ADJ,SOLID 10K			
RV102	1-230-523-11	RES,ADJ,SOLID 10K			
RY1	1-515-683-11	RELAY			
RY101	1-515-683-11	RELAY			
T1	1-433-368-11	TRANSFORMER,BIAS OSCILLATION			
T101	1-433-368-11	TRANSFORMER,BIAS OSCILLATION			

AU-2 BOARD

511	*A-2010-304-A	MOUNTTED PCB,AU-2			
C1	1-101-894-00	CERAMIC	56PF	5%	50V
C2	1-101-880-00	CERAMIC	47PF	5%	50V
C3	1-130-473-00	MYLAR	0.0015MF	5%	50V
C4	1-126-163-11	ELECT	4.7MF	20%	50V
C5	1-130-487-00	MYLAR	0.022MF	5%	50V
C6	1-124-589-11	ELECT	47MF	20%	16V
C7	1-124-589-11	ELECT	47MF	20%	16V
C8	1-102-961-00	CERAMIC	27PF	5%	50V
C9	1-124-438-00	ELECT	1MF	20%	50V
C10	1-124-589-11	ELECT	47MF	20%	16V

Ref.No.	Part No.	Description			
C11	1-124-257-00	ELECT	2.2MF	20%	50V
C12	1-102-963-00	CERAMIC	33PF	5%	50V
C13	1-124-438-00	ELECT	1MF	20%	50V
C14	1-130-473-00	MYLAR	0.0015MF	5%	50V
C15	1-124-589-11	ELECT	47MF	20%	16V
C16	1-102-973-00	CERAMIC	100PF	5%	50V
C21	1-101-884-00	CERAMIC	5GPF	5%	50V
C22	1-101-880-00	CERAMIC	47PF	5%	50V
C23	1-130-473-00	MYLAR	0.0015MF	5%	50V
C24	1-126-163-11	ELECT	4.7MF	20%	50V
C25	1-130-487-00	MYLAR	0.022MF	5%	50V
C26	1-124-589-11	ELECT	47MF	20%	16V
C27	1-124-589-11	ELECT	47MF	20%	16V
C28	1-102-961-00	CERAMIC	27PF	5%	50V
C29	1-124-438-00	ELECT	1MF	20%	50V
C31	1-124-257-00	ELECT	2.2MF	20%	50V
C32	1-102-963-00	CERAMIC	33PF	5%	50V
C33	1-124-438-00	ELECT	1MF	20%	50V
C34	1-130-473-00	MYLAR	0.0015MF	5%	50V
C36	1-102-973-00	CERAMIC	100PF	5%	50V
C42	1-130-012-00	FILM	330PF	5%	50V
C43	1-130-479-00	MYLAR	0.0047MF	5%	50V
C44	1-130-479-00	MYLAR	0.0047MF	5%	50V
C45	1-123-333-00	ELECT	100MF	20%	16V
C46	1-136-433-11	FILM	100MF	5%	630V
C47	1-107-202-00	MICA	10PF	10%	500V
C48	1-107-202-00	MICA	10PF	10%	500V
C49	1-109-621-00	MICA	220PF	5%	500V
C50	1-107-202-00	MICA	10PF	10%	500V
C51	1-123-333-00	ELECT	100MF	20%	16V
C52	1-123-333-00	ELECT	100MF	20%	16V
C53	1-124-589-11	ELECT	47MF	20%	16V
CN1	*1-560-462-00	PIN,CONNECTOR	6P		
CN2	*1-560-469-00	PIN,CONNECTOR	6P		
CN3	*1-560-469-00	PIN,CONNECTOR	6P		
CN4	*1-560-463-00	PIN,CONNECTOR	8P		
CN5	*1-560-469-00	PIN,CONNECTOR	6P		
CN6	*1-560-467-00	PIN,CONNECTOR	4P		
CT1	1-141-297-11	TRIMMER,CERAMIC			
CT2	1-141-297-11	TRIMMER,CERAMIC			
D1	8-719-911-19	DIODE 1SS119			
D2	8-719-200-81	DIODE 11ES1			
FL1	1-409-406-11	COIL,BIAS TRAP			
FL2	1-409-406-11	COIL,BIAS TRAP			
IC1	8-759-100-06	IC UPC4556C			
IC2	8-759-100-06	IC UPC4556C			
IC3	8-759-900-72	IC NE5532P			
L1	1-410-310-11	COIL,VARIABLE			
L2	1-410-310-11	COIL,VARIABLE			
L3	1-410-311-11	COIL (SHIELD TYPE)			
L4	1-424-371-11	COIL			
Q1	8-729-119-78	TRANSISTOR 2SC2603-HFE			
Q4	8-729-140-96	TRANSISTOR 2SC1384-R			
Q5	8-729-119-76	TRANSISTOR 2SB733-3			
Q6	8-729-199-82	TRANSISTOR 2SD998-K			

Ref.No.	Part No.	Description			
R1	1-249-435-11	CARBON	33K	5%	1/4W
R2	1-247-881-00	CARBON	120K	5%	1/4W
R3	1-249-432-11	CARBON	18K	5%	1/4W
R4	1-249-431-11	CARBON	15K	5%	1/4W
R5	1-249-412-11	CARBON	390	5%	1/4W
R6	1-249-417-11	CARBON	1K	5%	1/4W
R7	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R8	1-249-411-11	CARBON	330	5%	1/4W
R9	1-249-429-11	CARBON	10K	5%	1/4W
R10	1-249-421-11	CARBON	2.2K	5%	1/4W
R11	1-249-429-11	CARBON	10K	5%	1/4W
R12	1-249-421-11	CARBON	2.2K	5%	1/4W
R13	1-249-409-11	CARBON	220	5%	1/4W
R14	1-249-425-11	CARBON	4.7K	5%	1/4W
R15	1-249-421-11	CARBON	2.2K	5%	1/4W
R16	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R17	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R21	1-249-435-11	CARBON	33K	5%	1/4W
R22	1-247-881-00	CARBON	120K	5%	1/4W
R23	1-249-432-11	CARBON	18K	5%	1/4W
R24	1-249-431-11	CARBON	15K	5%	1/4W
R25	1-249-412-11	CARBON	390	5%	1/4W
R26	1-249-417-11	CARBON	1K	5%	1/4W
R27	⚠1-212-869-00	FUSIBLE	33	5%	1/4W F
R28	1-249-411-11	CARBON	330	5%	1/4W
R29	1-249-429-11	CARBON	10K	5%	1/4W
R30	1-249-421-11	CARBON	2.2K	5%	1/4W
R31	1-249-429-11	CARBON	10K	5%	1/4W
R32	1-249-421-11	CARBON	2.2K	5%	1/4W
R33	1-249-409-11	CARBON	220	5%	1/4W
R34	1-249-425-11	CARBON	4.7K	5%	1/4W
R35	1-249-421-11	CARBON	2.2K	5%	1/4W
R36	1-249-441-11	CARBON	100K	5%	1/4W
R37	1-249-423-11	CARBON	3.3K	5%	1/4W
R38	1-249-429-11	CARBON	10K	5%	1/4W
R41	1-249-421-11	CARBON	2.2K	5%	1/4W
R42	1-249-425-11	CARBON	4.7K	5%	1/4W
R43	1-249-429-11	CARBON	10K	5%	1/4W
R44	1-249-441-11	CARBON	100K	5%	1/4W
R45	1-249-393-11	CARBON	10	5%	1/4W
R46	1-249-393-11	CARBON	10	5%	1/4W
R47	1-249-393-11	CARBON	10	5%	1/4W
R48	1-249-393-11	CARBON	10	5%	1/4W
R49	1-249-387-11	CARBON	3.3	5%	1/4W
R50	1-249-439-11	CARBON	68K	5%	1/4W
R51	1-249-430-11	CARBON	12K	5%	1/4W
R52	1-249-397-11	CARBON	22	5%	1/4W
R54	1-249-387-11	CARBON	3.3	5%	1/4W
R56	⚠1-217-638-00	FUSIBLE	1.5	5%	1/4W F
RV1	1-230-523-11	RES,ADJ,SOLID 10K			
RV2	1-230-523-11	RES,ADJ,SOLID 10K			
RV3	1-230-523-11	RES,ADJ,SOLID 10K			
RV4	1-230-523-11	RES,ADJ,SOLID 10K			
RY1	1-515-683-11	RELAY			
T1	1-433-368-11	TRANSFORMER,BIAS OSCILLATION			

Ref.No.	Part No.	Description			
		SY-3 BOARD			
521	*A-2019-223 A	MOUNTED PCB,SY-3 (M)			
BZ501	1-529-069-11	BUZZER,PIEZOELECTRIC			
C1	1-126-256-11	ELECT	4700MF	20%	35V
C2	1-126-256-11	ELECT	4700MF	20%	35V
C3	1-126-256-11	ELECT	4700MF	20%	35V
C4	1-124-360-00	ELECT	1000MF	20%	16V
C5	1-124-618-11	ELECT	2200MF	20%	35V
C6	1-124-618-11	ELECT	2200MF	20%	35V
C7	1-124-618-11	ELECT	2200MF	20%	35V
C8	1-124-477-11	ELECT	47MF	20%	16V
C9	1-124-477-11	ELECT	47MF	20%	16V
C10	1-124-477-11	ELECT	47MF	20%	16V
C11	1-124-477-11	ELECT	47MF	20%	16V
C12	1-124-477-11	ELECT	47MF	20%	16V
C13	1-161-057-00	CERAMIC	0.033MF	10%	50V
C14	1-102-962-00	CERAMIC	30PF	5%	50V
C15	1-102-962-00	CERAMIC	30PF	5%	50V
C16	1-124-477-11	ELECT	47MF	20%	16V
C17	1-124-477-11	ELECT	47MF	20%	16V
C18	1-124-477-11	ELECT	47MF	20%	16V
C19	1-124-477-11	ELECT	47MF	20%	16V
C20	1-124-477-11	ELECT	47MF	20%	16V
C21	1-161-057-00	CERAMIC	0.033MF	10%	50V
C22	1-124-618-11	ELECT	2200MF	20%	35V
C23	1-130-487-00	MYLAR	0.022MF	5%	50V
C41	1-130-495-00	MYLAR	0.1MF	5%	50V
C42	1-130-495-00	MYLAR	0.1MF	5%	50V
C51	1-124-618-11	ELECT	2200MF	20%	35V
C52	1-124-360-00	ELECT	1000MF	20%	16V
C61	1-130-495-11	MYLAR	0.1MF	5%	50V
		(SERIAL NO.20201 HIGHTER)			
C62	1-130-495-11	MYLAR	0.1MF	5%	50V
		(SERIAL NO.20201 HIGHTER)			
C101	1-130-487-00	MYLAR	0.022MF	5%	50V
C102	1-130-487-00	MYLAR	0.022MF	5%	50V
C103	1-124-471-00	ELECT	1000MF	20%	6.3V
C201	1-130-487-00	MYLAR	0.022MF	5%	50V
C202	1-130-487-00	MYLAR	0.022MF	5%	50V
C203	1-124-471-00	ELECT	1000MF	20%	6.3V
C301	1-130-487-00	MYLAR	0.022MF	5%	50V
C302	1-130-487-00	MYLAR	0.022MF	5%	50V
C303	1-124-471-00	ELECT	1000MF	20%	6.3V
C401	1-130-487-00	MYLAR	0.022MF	5%	50V
C402	1-130-487-00	MYLAR	0.022MF	5%	50V
C403	1-124-471-00	ELECT	1000MF	20%	6.3V
CF1	1-567-875-11	VIBRATOR,CERAMIC			

Ref.No.	Part No.	Description	
CN1	*1-564-242-00	PIN,CONNECTOR	5P
CN2	*1-508-736-00	PIN,CONNECTOR	10P
CN4	1-564-320-00	PIN,CONNECTOR	2P
CN6	*1-560-470-00	PIN,CONNECTOR	8P
CN101	*1-560-469-00	PIN,CONNECTOR	6P
CN201	*1-560-469-00	PIN,CONNECTOR	6P
CN301	*1-560-469-00	PIN,CONNECTOR	6P
CN401	*1-560-469-00	PIN,CONNECTOR	6P
CN502	*1-560-466-00	PIN,CONNECTOR	3P
D1	8-718-505-60	DIODE	S5VB20
D2	8-718-505-60	DIODE	S5VB20
D3	8-719-200-81	DIODE	11ES1
D4	8-719-200-81	DIODE	11ES1
D5	8-719-911-19	DIODE	1SS119
D6	8-719-911-19	DIODE	1SS119
D7	8-719-200-81	DIODE	11ES1
D101	8-719-200-81	DIODE	11ES1
D102	8-719-911-19	DIODE	1SS119
D103	8-719-911-19	DIODE	1SS119
D104	8-719-911-19	DIODE	1SS119
D201	8-719-200-81	DIODE	11ES1
D202	8-719-911-19	DIODE	1SS119
D203	8-719-911-19	DIODE	1SS119
D204	8-719-911-19	DIODE	1SS119
D301	8-719-200-81	DIODE	11ES1
D302	8-719-911-19	DIODE	1SS119
D303	8-719-911-19	DIODE	1SS119
D304	8-719-911-19	DIODE	1SS119
D401	8-719-200-81	DIODE	11ES1
D402	8-719-911-19	DIODE	1SS119
D403	8-719-911-19	DIODE	1SS119
D404	8-719-911-19	DIODE	1SS119
D502	8-719-911-19	DIODE	1SS119
D503	8-719-911-19	DIODE	1SS119
D504	8-719-911-19	DIODE	1SS119
D505	8-719-911-19	DIODE	1SS119
IC5	8-759-913-42	IC	PST520C-2
IC6	8-759-635-02	IC	M50747-C42SP
IC8	8-759-982-05	IC	RC7805FA
IC101	8-759-984-03	IC	LM339N
IC201	8-759-984-03	IC	LM339N
IC301	8-759-984-03	IC	LM339N
IC401	8-759-984-03	IC	LM339N
[illegible]			
[illegible]			
Q1	8-729-900-80	TRANSISTOR	DTC114ES
Q2	8-729-199-82	TRANSISTOR	2SD998-M
Q4	8-729-900-80	TRANSISTOR	DTC114ES
Q5	8-729-900-80	TRANSISTOR	DTC114ES
Q6	8-729-900-80	TRANSISTOR	DTC114ES

Ref.No.	Part No.	Description
Q102	8-729-119-76	TRANSISTOR 2SB733-34
Q103	8 729-900-61	TRANSISTOR DTA114ES
Q104	8-729-900-61	TRANSISTOR DTA114ES
Q112	8-729-119-76	TRANSISTOR 2SB733-34
Q113	8-729-900-61	TRANSISTOR DTA114ES
Q114	8-729-900-61	TRANSISTOR DTA114ES
Q121	8-729-900-61	TRANSISTOR DTA114ES
Q122	8-729-140-96	TRANSISTOR 2SD774-3
Q123	8-729-921-04	TRANSISTOR 2SA1317-STU
Q202	8-729-119-76	TRANSISTOR 2SB733-34
Q203	8-729-900-61	TRANSISTOR DTA114ES
Q204	8-729-900-61	TRANSISTOR DTA114ES
Q212	8-729-119-76	TRANSISTOR 2SB733-34
Q213	8-729-900-61	TRANSISTOR DTA114ES
Q214	8-729-900-61	TRANSISTOR DTA114ES
Q221	8-729-900-61	TRANSISTOR DTA114ES
Q222	8-729-140-96	TRANSISTOR 2SD774-3
Q223	8-729-921-04	TRANSISTOR 2SA1317-STU
Q302	8-729-119-76	TRANSISTOR 2SB733-34
Q303	8-729-900-61	TRANSISTOR DTA114ES
Q304	8-729-900-61	TRANSISTOR DTA114ES
Q312	8-729-119-76	TRANSISTOR 2SB733-34
Q313	8-729-900-80	TRANSISTOR DTC114ES
Q314	8-729-900-61	TRANSISTOR DTA114ES
Q321	8-729-900-61	TRANSISTOR DTA114ES
Q322	8-729-140-96	TRANSISTOR 2SD774-3
Q323	8-729-921-04	TRANSISTOR 2SA1317-STU
Q402	8-729-119-76	TRANSISTOR 2SB733-34
Q403	8-729-900-61	TRANSISTOR DTA114ES
Q404	8-729-900-61	TRANSISTOR DTA114ES
Q412	8-729-119-76	TRANSISTOR 2SB733-34
Q413	8-729-900-61	TRANSISTOR DTA114ES
Q414	8-729-900-61	TRANSISTOR DTA114ES
Q421	8-729-900-61	TRANSISTOR DTA114ES
Q422	8-729-140-96	TRANSISTOR 2SD774-3
Q423	8-729-921-04	TRANSISTOR 2SA1317-STU
Q501	8-729-900-80	TRANSISTOR DTC114ES
Q502	8-729-900-61	TRANSISTOR DTA114ES
Q503	8-729 900 61	TRANSISTOR DTA114ES
Q504	8-729-900-61	TRANSISTOR DTA114ES
Q505	8-729-900-61	TRANSISTOR DTA114ES
R1	1-249-441-11	CARBON 100K 5% 1/4W
R2	1-249-416-11	CARBON 820 5% 1/4W
R3	1-249 416-11	CARBON 820 5% 1/4W
R4	1-249-441-11	CARBON 100K 5% 1/4W
R5	1-249-429-11	CARBON 10K 5% 1/4W
R6	1-249-401-11	CARBON 47 5% 1/4W
R7	1-247-903-00	CARBON 1M 5% 1/4W
R8	1-249-429-11	CARBON 10K 5% 1/4W
R17	1-249-416-11	CARBON 820 5% 1/4W
R18	1-249-416-11	CARBON 820 5% 1/4W

Ref.No.	Part No.	Description
R19	1-249-416-11	CARBON 820 5% 1/4W
R22	1-249-441-11	CARBON 100K 5% 1/4W
R102	1-249-417-11	CARBON 1K 5% 1/4W
R104	1-249-429-11	CARBON 10K 5% 1/4W
R105	1-249-396-11	CARBON 18 5% 1/4W
R112	1-249-417-11	CARBON 1K 5% 1/4W
R114	1-249-429-11	CARBON 10K 5% 1/4W
R115	1-249-416-11	CARBON 820 5% 1/4W
R116	1-249-429-11	CARBON 10K 5% 1/4W
R117	1-249-401-11	CARBON 47 5% 1/4W
R122	1-249-425-11	CARBON 4.7K 5% 1/4W
R202	1-249-417-11	CARBON 1K 5% 1/4W
R204	1-249-429-11	CARBON 10K 5% 1/4W
R205	1-249-396-11	CARBON 18 5% 1/4W
R212	1-249-417-11	CARBON 1K 5% 1/4W
R214	1-249-429-11	CARBON 10K 5% 1/4W
R215	1-249-416-11	CARBON 820 5% 1/4W
R216	1-249-429-11	CARBON 10K 5% 1/4W
R217	1-249-401-11	CARBON 47 5% 1/4W
R222	1-249-425-11	CARBON 4.7K 5% 1/4W
R302	1-249-417-11	CARBON 1K 5% 1/4W
R304	1-249-429-11	CARBON 10K 5% 1/4W
R305	1-249-396-11	CARBON 18 5% 1/4W
R312	1-249-417-11	CARBON 1K 5% 1/4W
R314	1-249-429-11	CARBON 10K 5% 1/4W
R315	1-249-416-11	CARBON 820 5% 1/4W
R316	1-249-429-11	CARBON 10K 5% 1/4W
R317	1-249-401-11	CARBON 47 5% 1/4W
R322	1-249 425-11	CARBON 4.7K 5% 1/4W
R402	1-249-417-11	CARBON 1K 5% 1/4W
R404	1-249-429-11	CARBON 10K 5% 1/4W
R405	1-249-396-11	CARBON 18 5% 1/4W
R412	1-249-417-11	CARBON 1K 5% 1/4W
R414	1-249-429-11	CARBON 10K 5% 1/4W
R415	1-249-416-11	CARBON 820 5% 1/4W
R416	1-249-429-11	CARBON 10K 5% 1/4W
R417	1-249-401-11	CARBON 47 5% 1/4W
R422	1-249-425-11	CARBON 4.7K 5% 1/4W
R501	1-249-429-11	CARBON 10K 5% 1/4W
R502	1-249-413-11	CARBON 470 5% 1/4W
R503	1 249-413-11	CARBON 470 5% 1/4W
R504	1-249-413-11	CARBON 470 5% 1/4W
R505	1-249-413-11	CARBON 470 5% 1/4W
R506	1-249-416-11	CARBON 820 5% 1/4W
R507	1-249-416-11	CARBON 820 5% 1/4W
R508	1-249-429-11	CARBON 10K 5% 1/4W
R509	1-249-416-11	CARBON 820 5% 1/4W
R510	1-249-416-11	CARBON 820 5% 1/4W
RB1	1-235-195-00	RESISTOR BLOCK 10Kx8
RB2	1-235-195-00	RESISTOR BLOCK 10Kx8
RB3	1-231-533-00	RESISTOR BLOCK 10Kx4

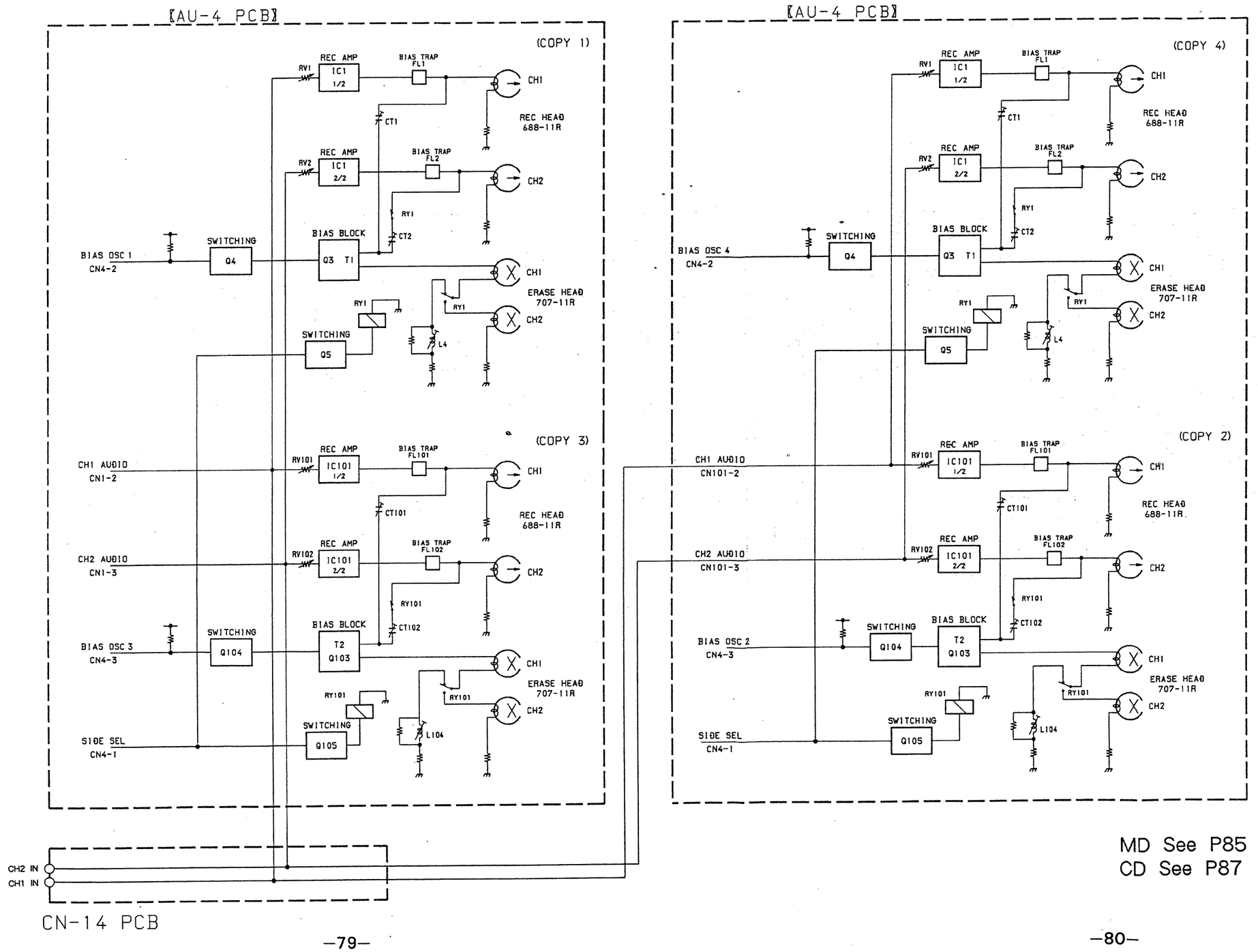
Ref.No.	Part No.	Description			
		EX-4 BOARD			
531	*A-2019-222-A	MOUNTED PCB, EX-4			
C31	1-130-495-00	MYLAR	0.1MF	5%	50V
C32	1-130-495-00	MYLAR	0.1MF	5%	50V
C33	1-130-495-00	MYLAR	0.1MF	5%	50V
C34	1-130-495-00	MYLAR	0.1MF	5%	50V
C35	1-130-495-00	MYLAR	0.1MF	5%	50V
C36	1-130-495-00	MYLAR	0.1MF	5%	50V
C37	1-130-495-00	MYLAR	0.1MF	5%	50V
C38	1-130-495-00	MYLAR	0.1MF	5%	50V
C39	1-130-495-00	MYLAR	0.1MF	5%	50V
C40	1-130-495-00	MYLAR	0.1MF	5%	50V
IC1	8-759-982-13	IC NJM7812A			
IC2	8-759-982-40	IC RC7912FA			
IC3	8-759-982-05	IC RC7805FA			
IC4	8-759-982-05	IC RC7805FA			
IC7	8-759-982-13	IC NJM7812A			
		SW-7 (M) BOARD			
161	*1-634-859-11	PC BOARD, SW-7			
CN1	*1-560-465-00	PIN, CONNECTOR 12P			
D2	8-719-311-21	DIODE SEL1121R			
D3	8-719-311-21	DIODE SEL1121R			
D4	8-719-311-21	DIODE SEL1121R			
D5	8-719-311-21	DIODE SEL1121R			
D6	8-719-311-21	DIODE SEL1121R			
S1	1-572-362-11	SWITCH, PUSH			
S2	1-572-362-11	SWITCH, PUSH			
S3	1-572-362-11	SWITCH, PUSH			
S4	1-572-362-11	SWITCH, PUSH			
S5	1-554-481-00	SWITCH, SLIDE			
		CN-14 (M) BOARD			
171	*1-634-869-11	PC BOARD, CN-14			
CN6	1-562-090-00	JACK 13P			
		MT-2 BOARD			
541	*A-2029-099-A	MT-2 ASSY (INCLUDED EX-3, EX-5, LED-4 BOARD)			
C1	1-102-961-00	CERAMIC	27PF	5%	50V
C2	1-124-477-11	ELECT	47MF	20%	16V
C3	1-124-791-11	ELECT	1MF	20%	50V
C4	1-130-479-00	ELECT	0.0047MF	5%	50V
C5	1-124-477-11	ELECT	47MF	20%	16V

Ref.No.	Part No.	Description			
C6	1-124-791-11	ELECT	1MF	20%	50V
C7	1-124-791-11	ELECT	1MF	20%	50V
C11	1-102-961-00	CERAMIC	27PF	5%	50V
C12	1-124-477-11	ELECT	47MF	20%	16V
C13	1-124-791-11	ELECT	1MF	20%	50V
C14	1-130-479-00	ELECT	0.0047MF	5%	50V
C15	1-124-477-11	ELECT	47MF	20%	16V
C16	1-124-791-11	ELECT	1MF	20%	50V
C17	1-124-791-11	ELECT	1MF	20%	50V
D1	8-719-101-60	DIODE RD6.2EL1			
D2	8-719-946-39	DIODE GL112F9			
D11	8-719-101-60	DIODE RD6.2EL1			
D12	8-719-946-39	DIODE GL112F9			
IC1	8-759-100-06	IC UPC1556C			
IC2	8-759-945-01	IC IR2E30			
IC12	8-759-945-01	IC IR2E30			
R1	1-249-429-11	CARBON	10K	5%	1/4W
R2	1-249-429-11	CARBON	10K	5%	1/4W
R3	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
R4	1-249-397-11	CARBON	22	5%	1/4W
R5	1-249-440-11	CARBON	82K	5%	1/4W
R6	1-249-426-11	CARBON	5.6K	5%	1/4W
R7	1-249-431-11	CARBON	15K	5%	1/4W
R11	1-249-429-11	CARBON	10K	5%	1/4W
R12	1-249-429-11	CARBON	10K	5%	1/4W
R13	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
R14	1-249-397-11	CARBON	22	5%	1/4W
R15	1-249-440-11	CARBON	82K	5%	1/4W
R16	1-249-426-11	CARBON	5.6K	5%	1/4W
R17	1-249-431-11	CARBON	15K	5%	1/4W
S1	1-554-667-31	SWITCH, SLIDE			
		EX-3 BOARD			
RV1	1-241-059-11	RES, VAR, CARBON 10K			
		LED-4 BOARD			
551	*A-2095-651-A	MOUNTED PCB, LED-4			
D1	8-719-313-21	DIODE SEL1321G			
R30	1-249-416-11	CARBON	820	5%	1/4W
		AC-3 BOARD			
151	*1-634-864-11	PC BOARD, AC-3			
CN1	1-560-222-11	INLET 3P			

MEMO

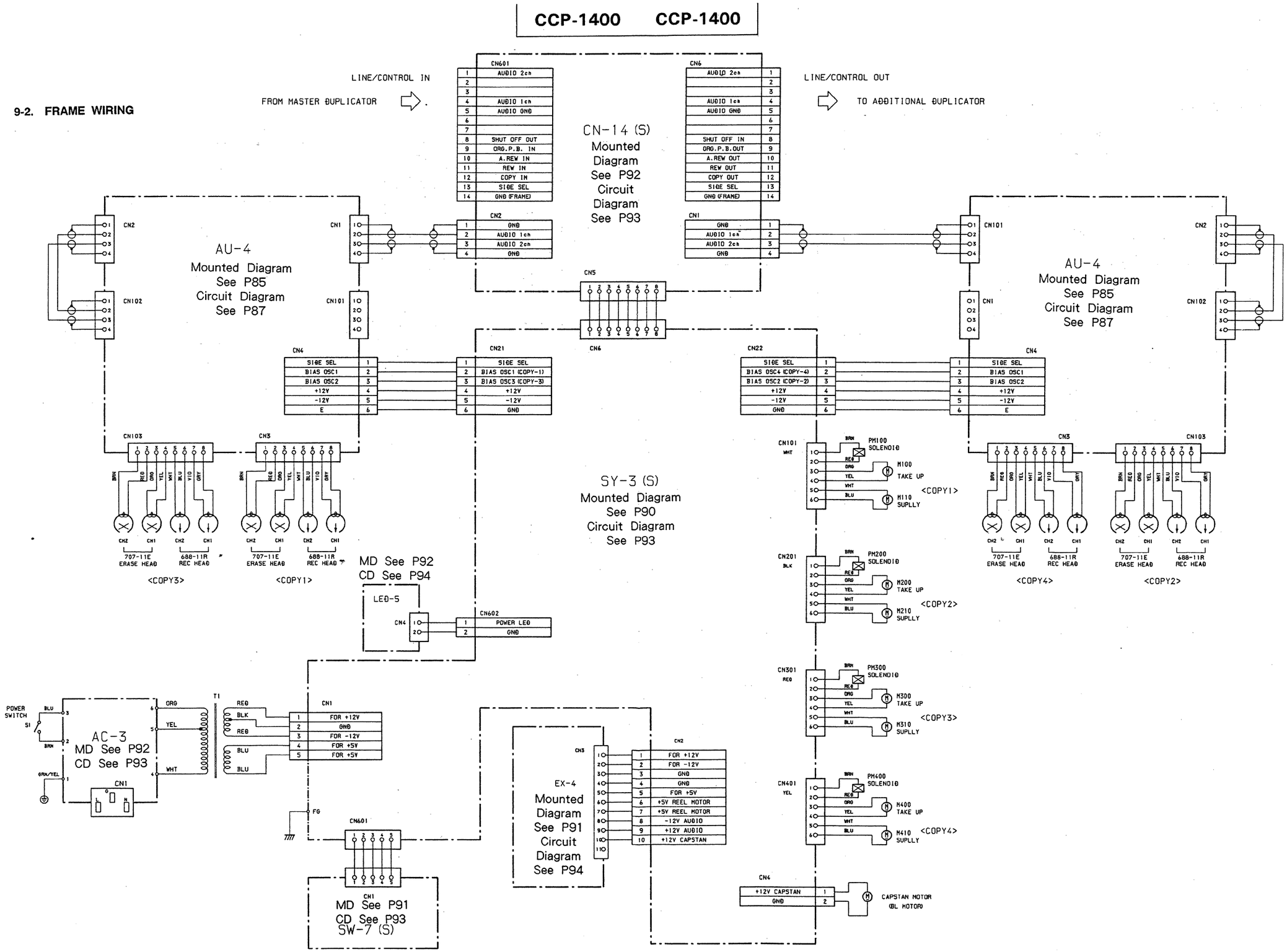
SECTION 9
CCP-1400 DIAGRAMS AND EXPLODED VIEW AND PARTS LIST

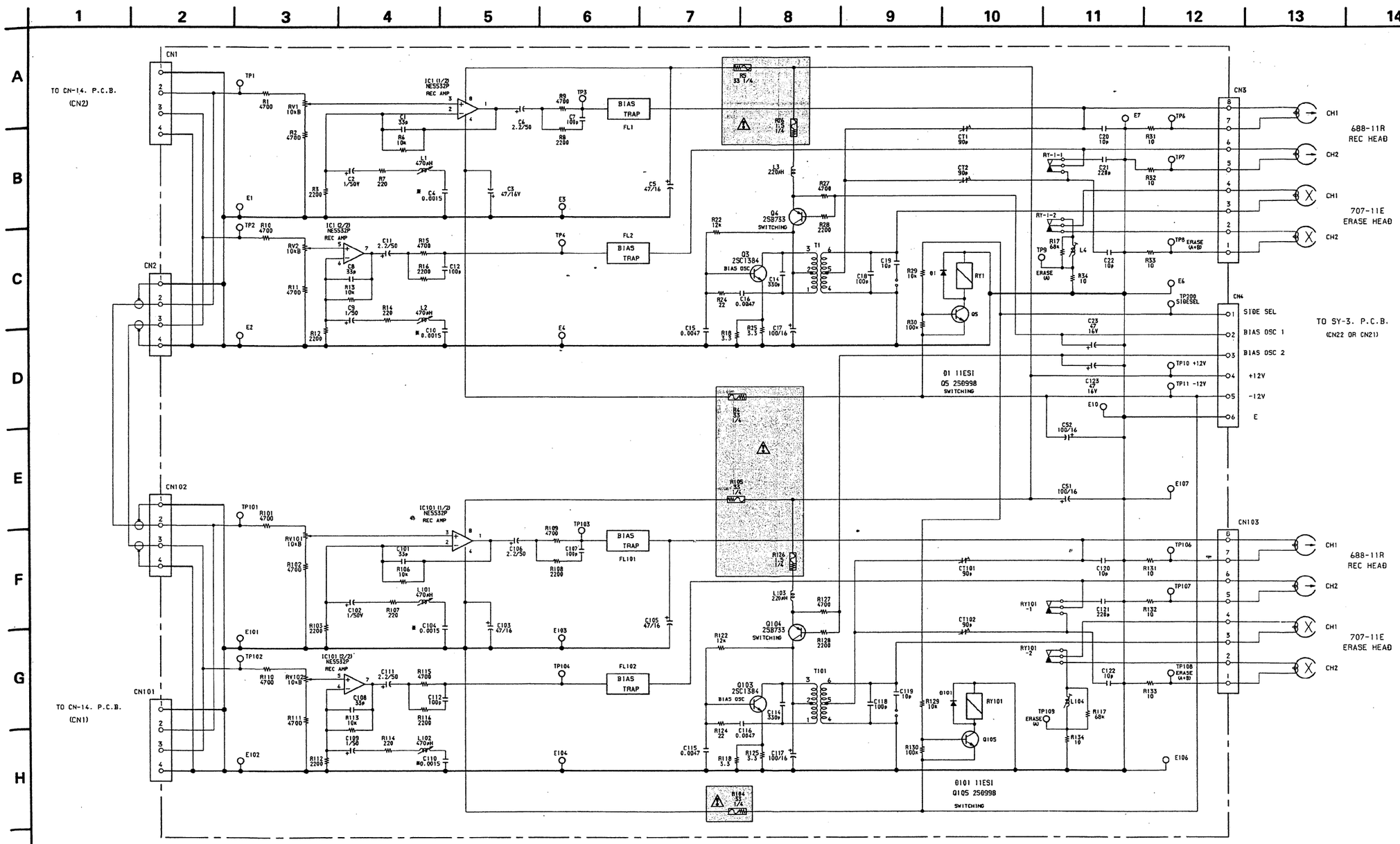
9-1. BLOCK DIAGRAM (AUDIO)



MD See P85
CD See P87

9-2. FRAME WIRING



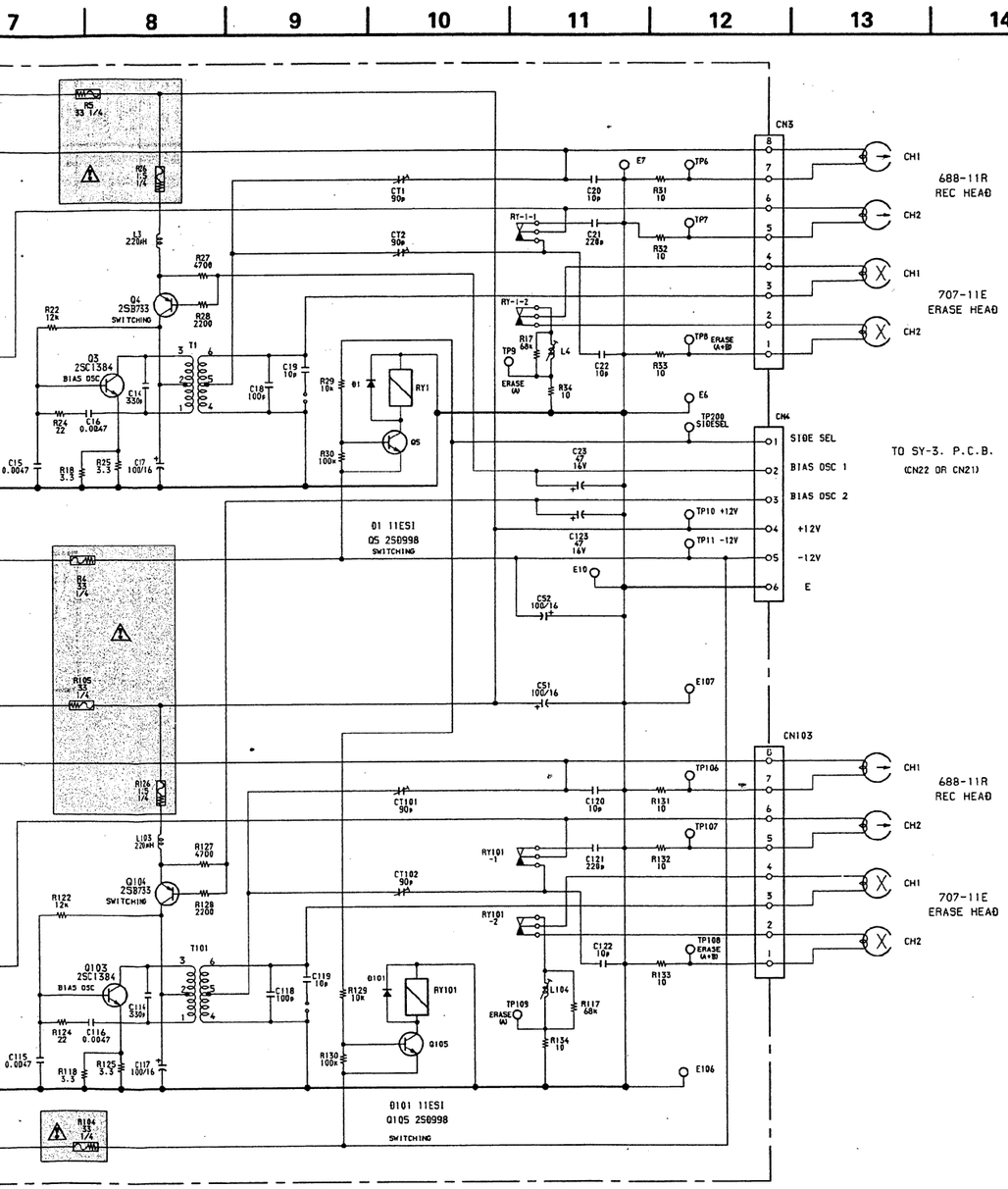


Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

MEMO



Note:

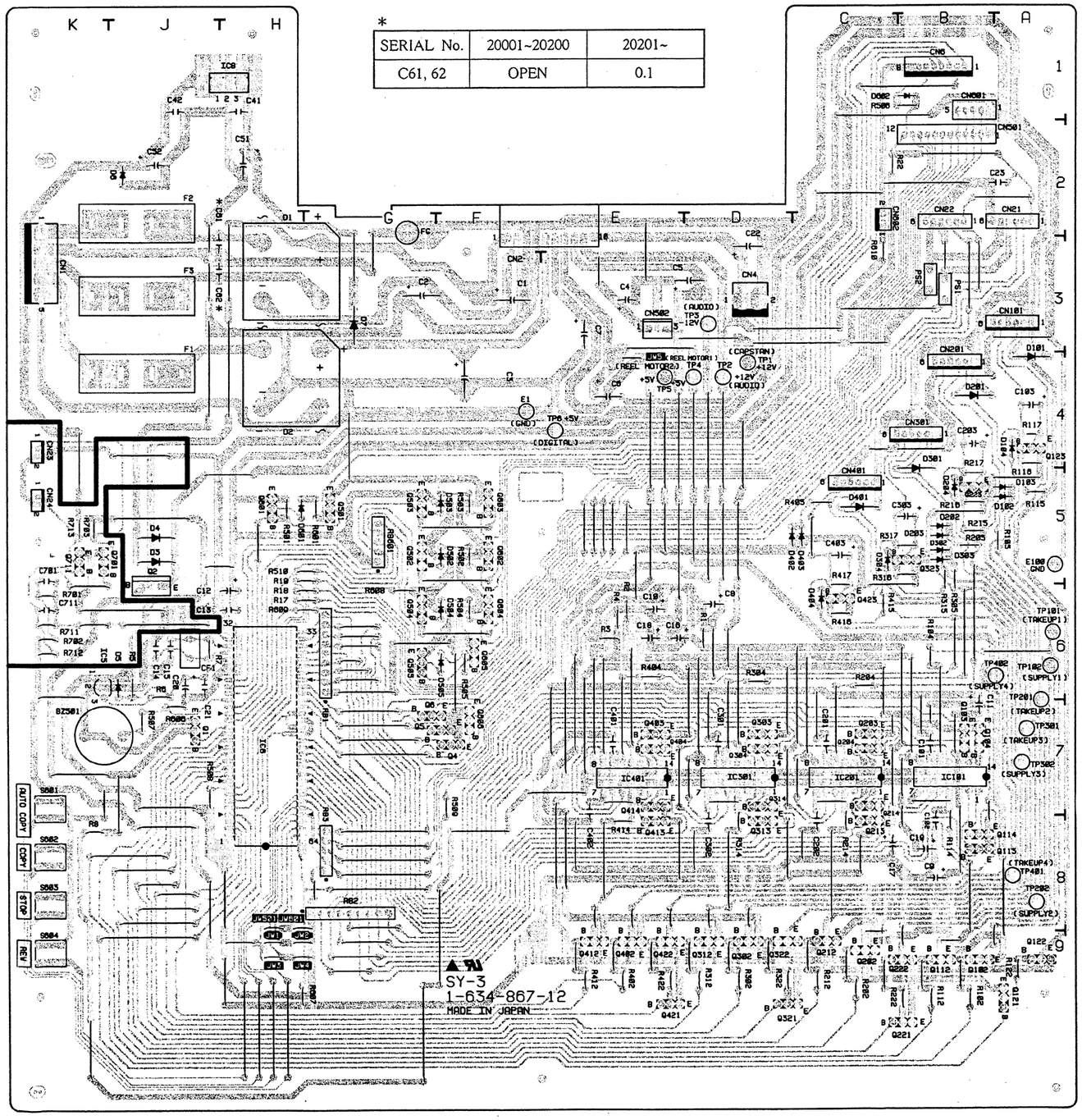
- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⏦ : fusible resistor.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

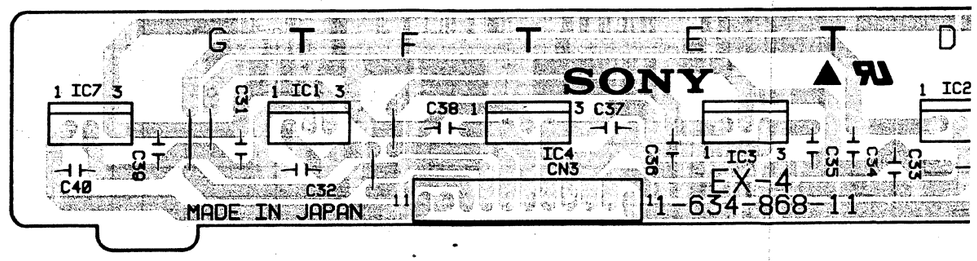
MEMO

9-4. SY-3 (S), EX-4, CN-14 (S), AC-3, SW-7 (S), LED-5 BOARDS – *Soldering Side* –

SY-3 (S) BOARD

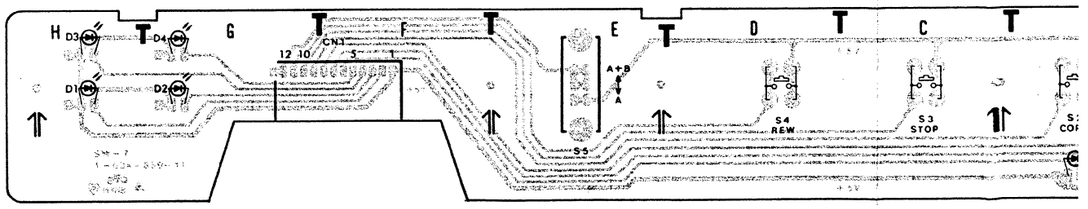


EX-4 BOARD

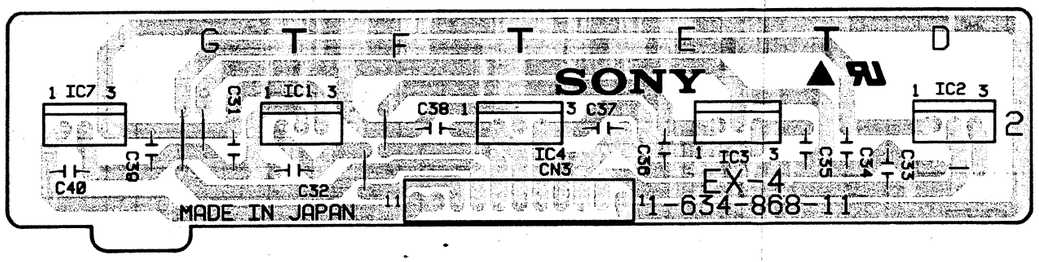


LED-5 BOARD

SW-7 (S) BOARD

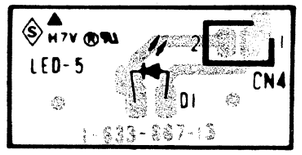


EX-4 BOARD



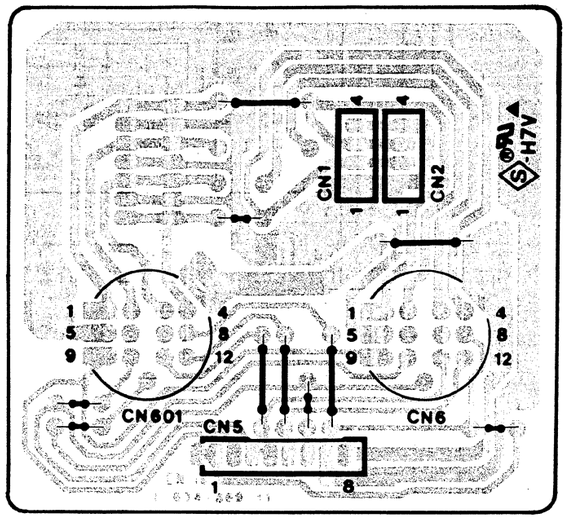
11

LED-5 BOARD



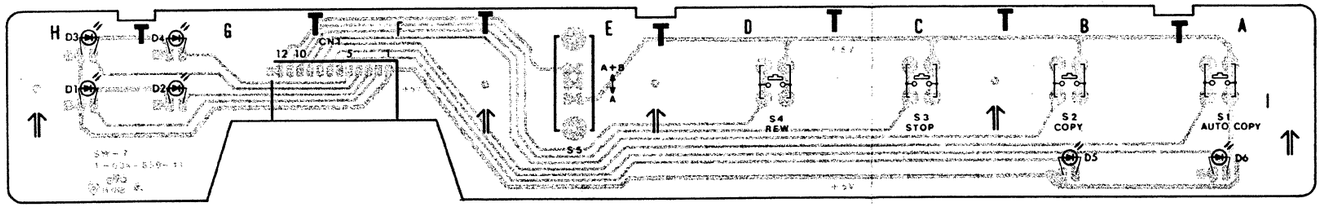
13

CN-14 (S) BOARD



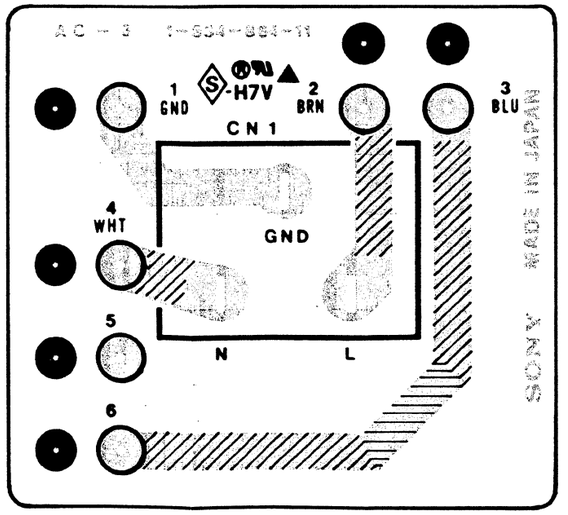
11

SW-7 (S) BOARD



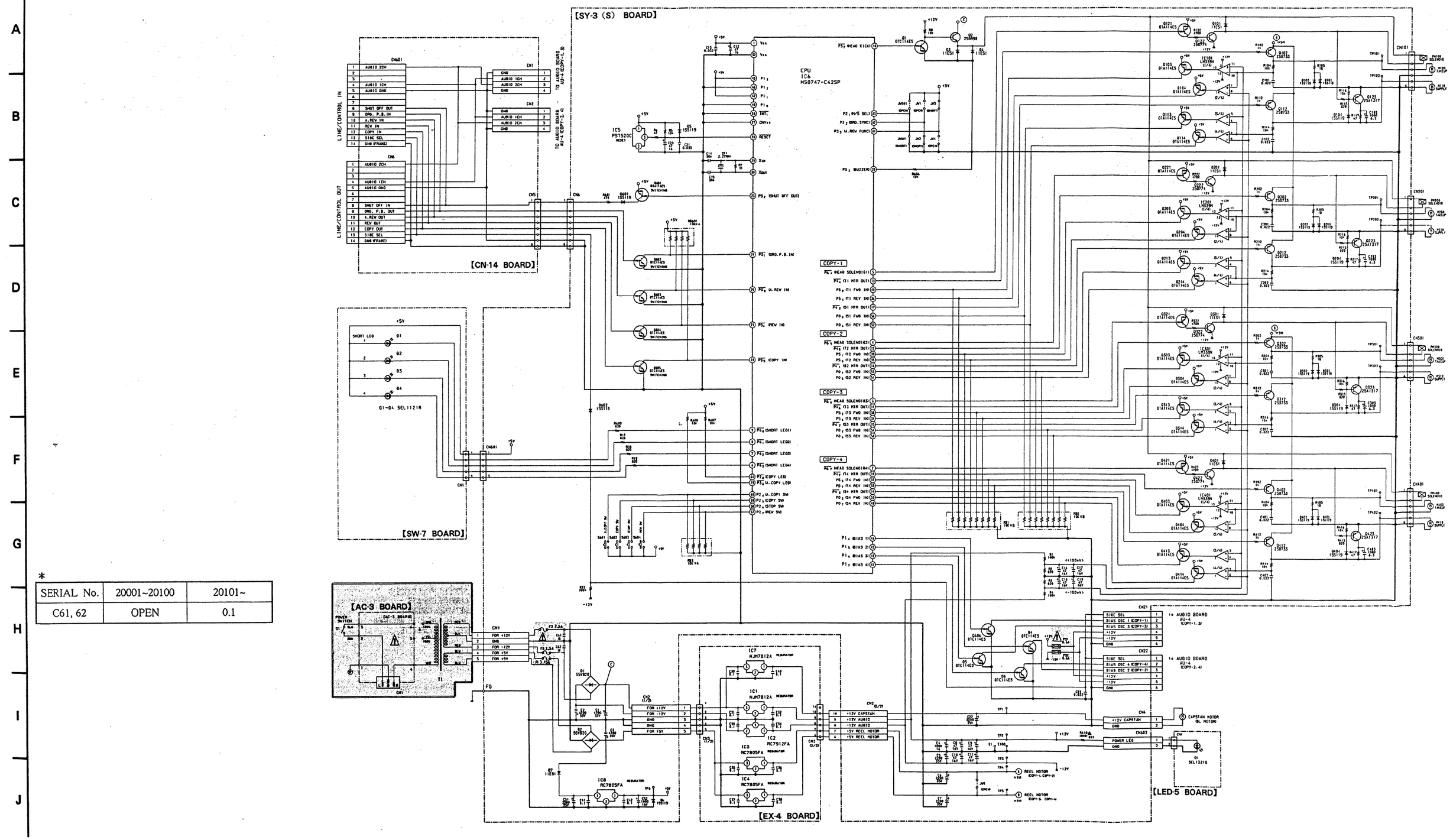
11

AC-3 BOARD



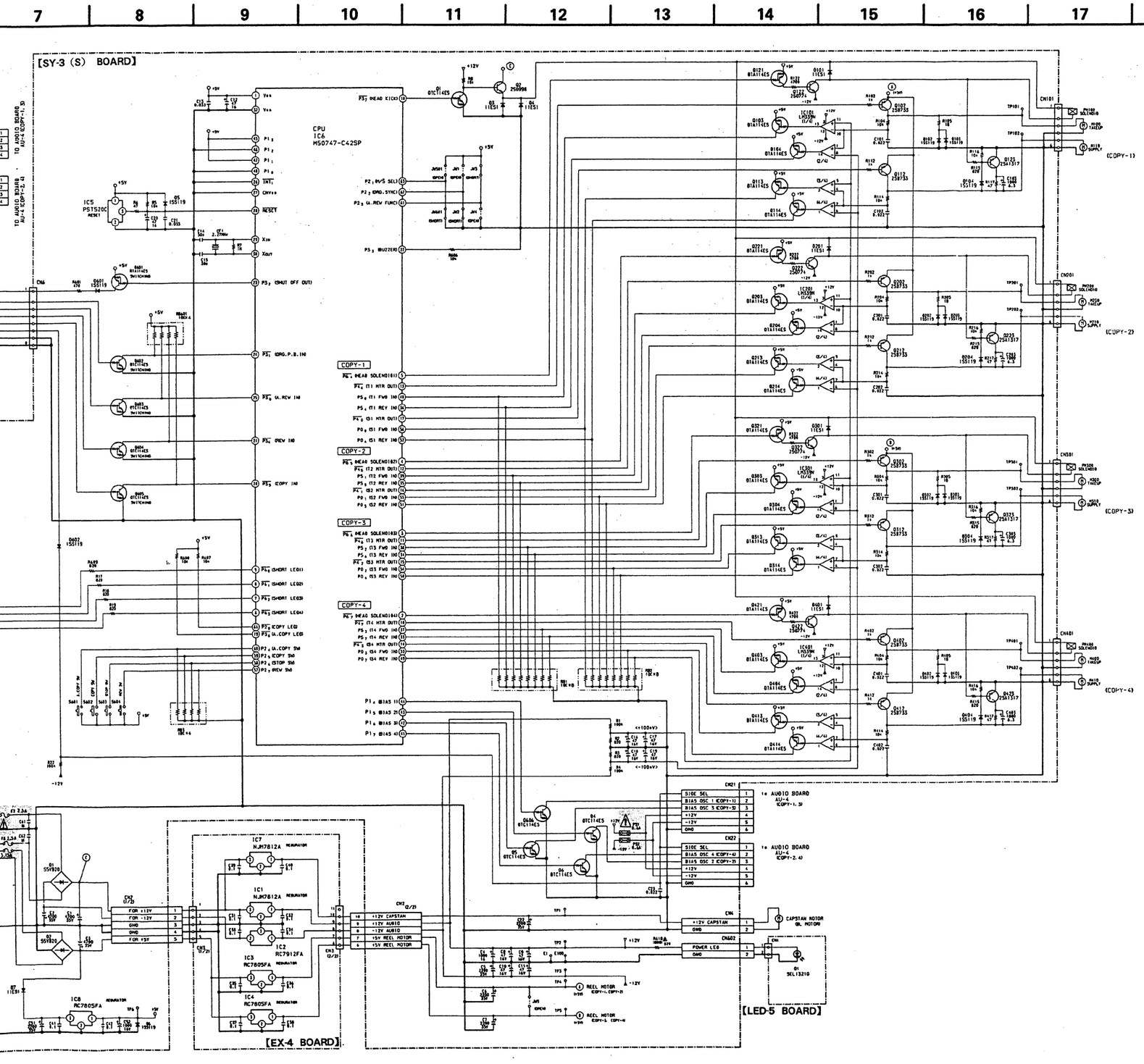
11

12



*

SERIAL No.	20001~20100	20101~
C61, 62	OPEN	0.1

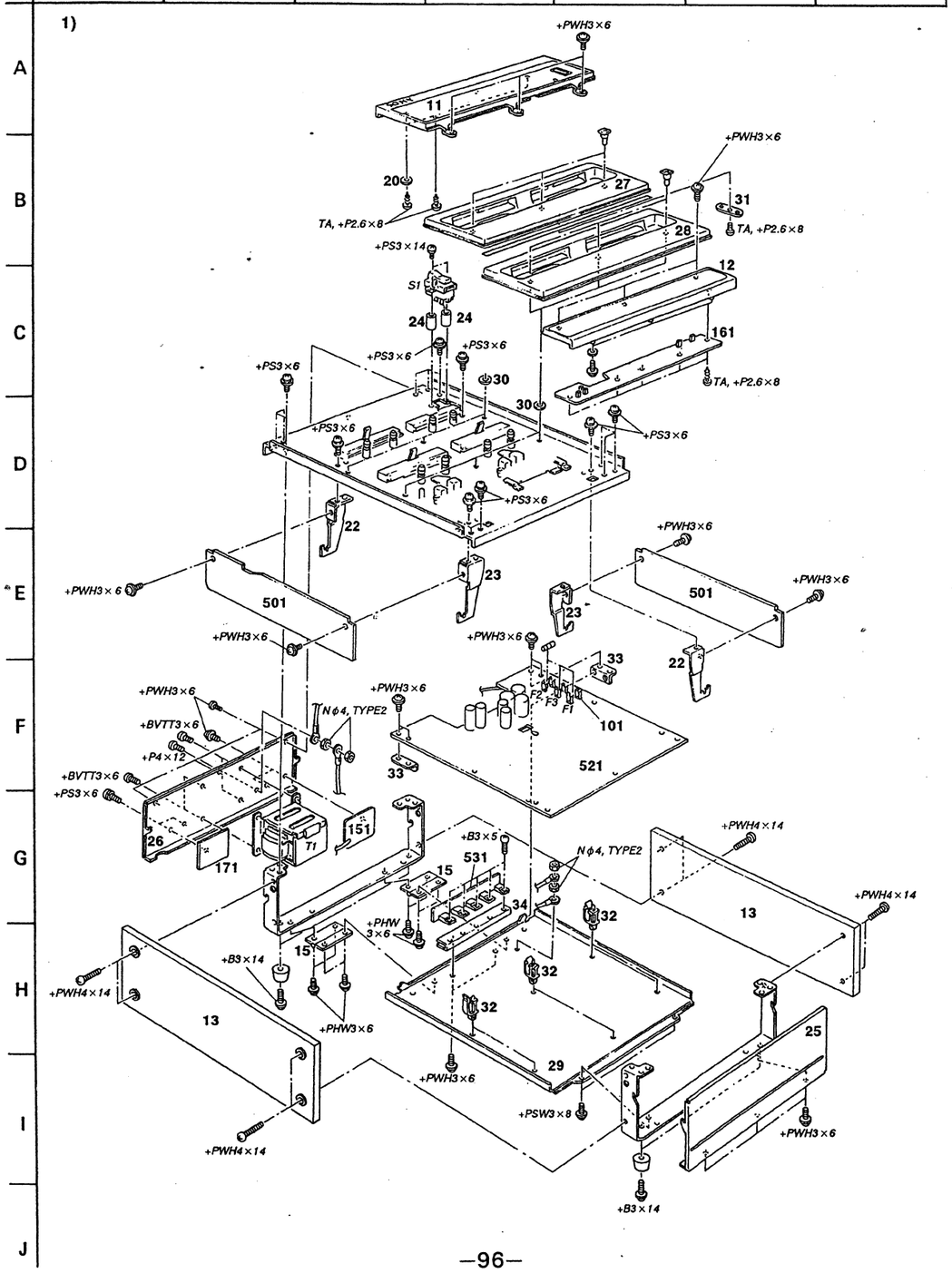


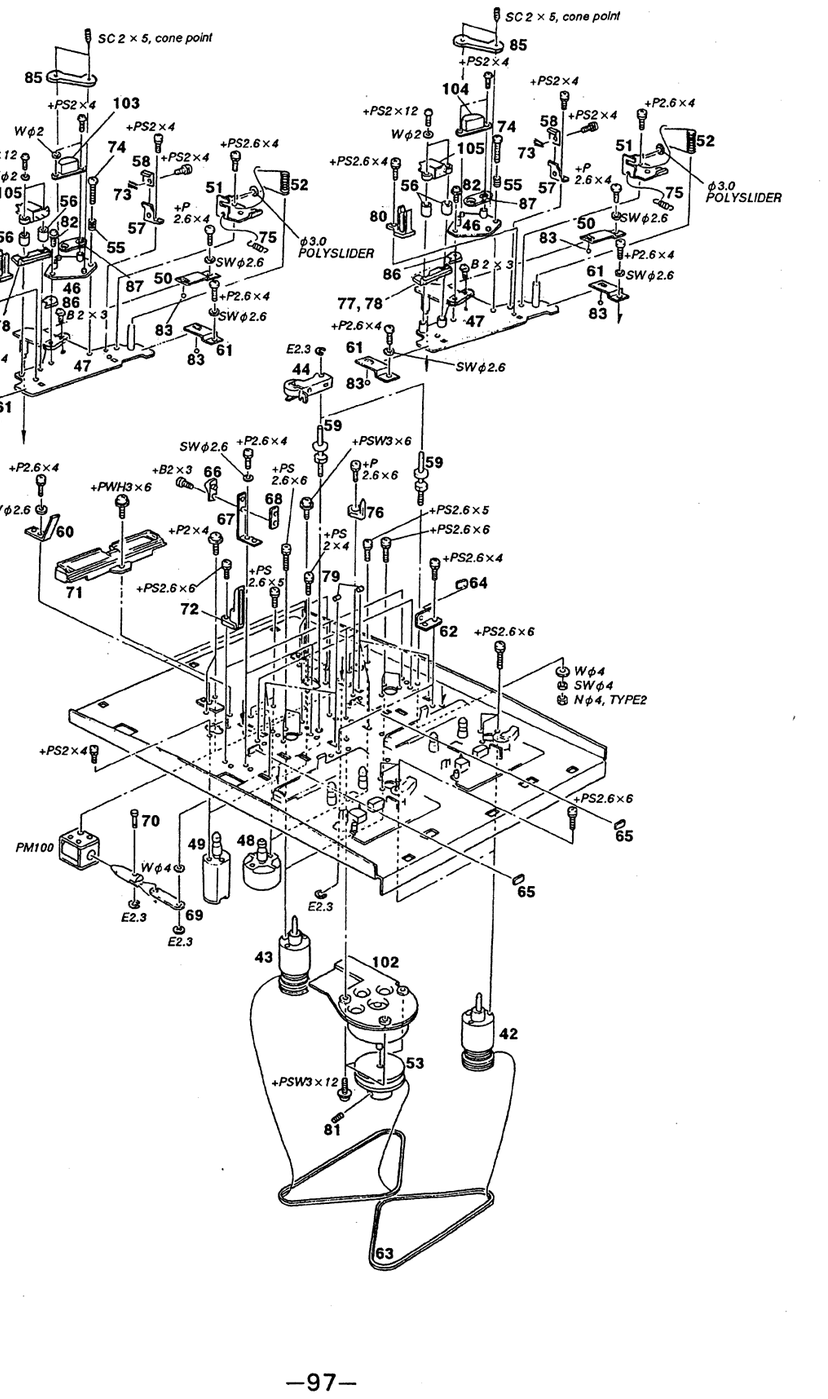
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/6 W or less unless otherwise specified.
- ⚠ : fusible resistor.

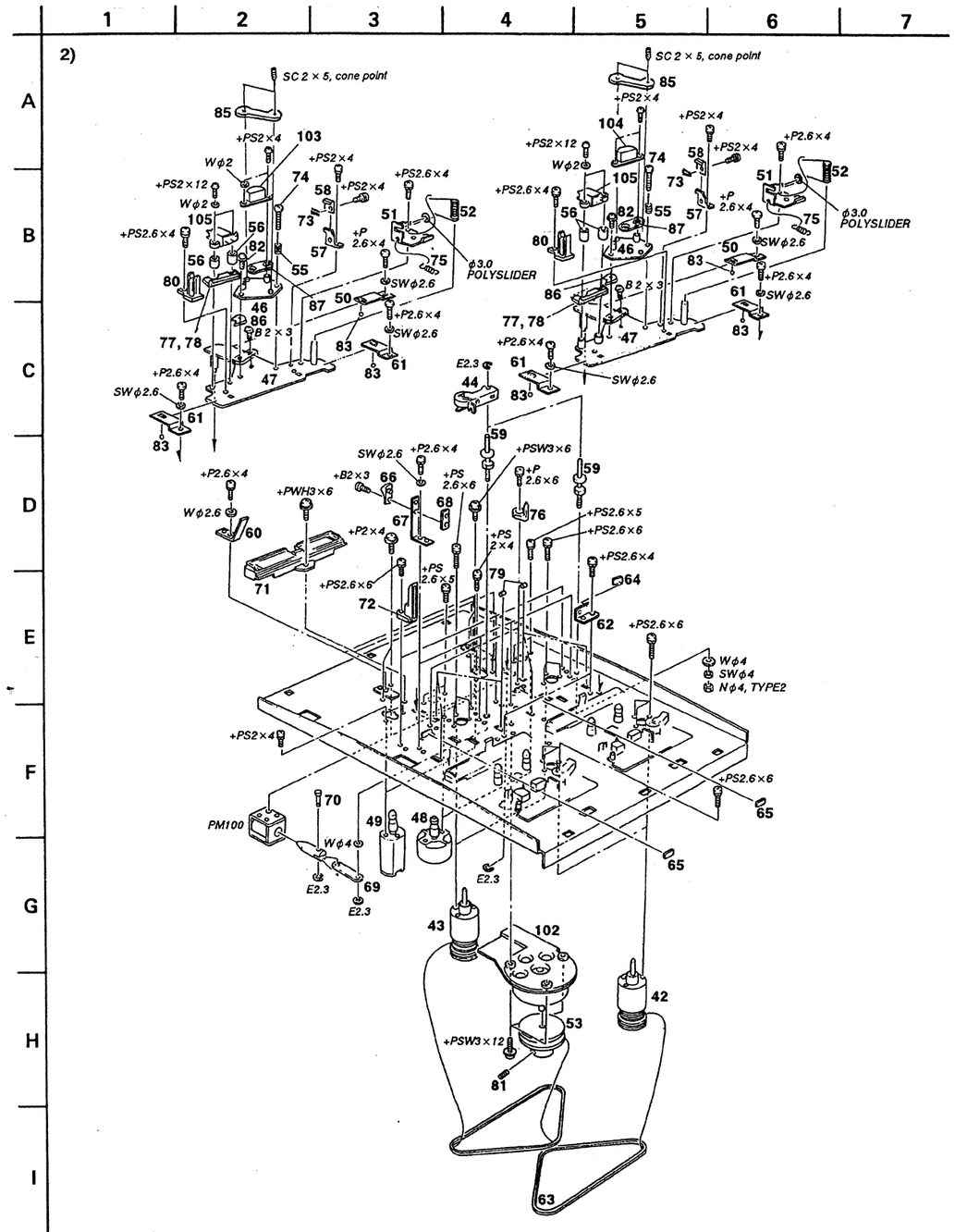
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

9-5. EXPLODED VIEWS





2)



1)

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
11	*X-3162-338-1	PANEL ASSY,METER	27	*3-164-265-21	PANEL,CASSETTE
12	*X-3162-339-1	PANEL ASSY,SWITCH	28	*3-164-265-31	PANEL,CASSETTE
13	*X-3162-347-1	PLATE ASSY SIDE	29	*3-164-266-01	PLATE,BOTTOM
15	*3-151-905-12	HINGE,DOOR	30	3-564-027-01	FELT,LIMITER
20	3-162-415-01	WASHER,THRUST	31	*3-668-743-00	NUT,PLATE,ROLLER,PRECEDING
22	*3-164-239-01	BRACKET (RIGHT),PC BOARD	32	*3-682-047-01	HOLDER (A),PC BOARD
23	*3-164-240-01	BRACKET (LEFT),PC BOARD	33	*3-164-251-01	SUPORT,PC BOARD
24	*3-164-242-01	SPACER,SWITCH	34	*3-164-252-01	HEAT SINK
25	*3-164-261-01	PANEL,FRONT			
26	*3-164-262-11	PANEL,REAR			

2)

Ref.No.	Part No.	Description	Ref.No.	Part No.	Description
42	*A-2109-009-A	CAPSTAN (B) ASSY	69	*3-164-249-01	PLATE,SOLENOID
43	*A-2109-011-A	CAPSTAN (C) ASSY	70	*3-164-250-01	SHAFT,JOINT
44	X-3162-306-1	PINCH ROLLER ASSY	71	*3-164-259-01	CASSETTE, RETAINER
46	*X-3162-343-1	PLATE ASSY,ADJUSTMENT,HEAD	72	3-164-271-01	GUIDE,CASSETTE
47	*X-3162-344-1	CHASSIS (R) ASSY,HEAD	73	3-164-272-01	BRUSH,ELECTROSTATIC PREVENTION
48	*X-3162-348-1	TABLE (RIGHT) ASSY,REEL	74	3-418-191-00	SCREW
49	*X-3162-349-1	TABLE (LEFT) ASSY,REEL	75	3-446-154-XX	SPRING,TENSION
50	*3-162-312-01	SPRING	76	3-491-131-00	PIN,CASSETTE GUIDE
51	*3-162-345-02	HOOK,SPRING	77	3-166-369-01	PLATE
52	3-162-399-01	SPRING	78	3-166-369-11	PLATE
53	3-164-221-01	PULLEY,MOTOR	79	3-558-448-00	ROLLER,HEAD CHASSIS
55	3-164-232-01	SPRING,COMPRESSION	80	3-576-837-00	CLAMP,LEAD
56	*3-164-233-01	SPACER,ERASE HEAD	81	3-701-509-00	SET SCREW,DOUBLE CAP 3x8
57	*3-164-234-01	BRACKET,BRUSH	82	7-621-770-67	SCREW (M2.6x6), (+) SPECIAL HEAD
58	*3-164-235-01	RETAINER,BRUSH	83	7-671-154-01	STEEL,BALL
59	*3-164-236-01	SHAFT,PINCH ROLLER	85	3-165-188-01	SPACER (1),ADJUSTMENT PLATE
60	*3-164-237-01	SPRING,CASSETTE RETAINER	86	*3-165-190-01	SPACER,ADJUSTMENT PLATE (SERIAL NO.20001~20100)
61	*3-164-238-01	RETAINER (B),HEAD CHASSIS			
62	*3-164-241-01	BRACKET,STOPPER	87	3-165-189-01	SPACER (2),ADJUSTMENT PLATE (SERIAL NO.20101 HIGHTER)
63	*3-164-243-01	BELT,CAPSTAN			
64	*3-164-244-01	STOPPER,HEAD CHASSIS			
65	*3-164-245-01	CUSHION,CHASSIS			
66	*3-164-246-01	RETAINER,CASSETTE			
67	3-164-247-01	SPRING,CASSETTE RETAINER			
68	*3-164-248-01	RETAINER,CASSETTE			

9-6. PARTS LIST

ACCESSORIES

Ref.No.	Part No.	Description
	X-3701-105-0	ROD ASSY, CLEANING, HEAD
	⚠1-557-377-11	CORD, POWER (3 CORE)
	1-558-196-11	CORD, CONNECTION 13P
	3-164-273-01	COVER, DUST
	3-751-805-21	MANUAL, INSTRUCTION

ELECTRICAL PARTS

Ref.No.	Part No.	Description
101	1-533-189-11	HOLDER, FUSE
102	1-541-747-11	MOTOR, CAPSTAN
104	1-543-688-11	HEAD, MAGNETIC (RECORD)
105	1-543-707-11	HEAD, MAGNETIC (ERASE)
T1	⚠1-449-828-11	TRANSFORMER, POWER
S1	⚠1-570-744-21	SWITCH, AC POWER
F1	⚠1-532-745-11	FUSE, GLASS TUBE
F2	⚠1-532-744-11	FUSE, GLASS TUBE
F3	⚠1-532-744-11	FUSE, GLASS TUBE
PM100	1-454-495-11	SOLENOID, PLUNGER
PM200	1-454-495-11	SOLENOID, PLUNGER
PM300	1-454-495-11	SOLENOID, PLUNGER
PM400	1-454-495-11	SOLENOID, PLUNGER
M100	1-541-163-00	MOTOR
M200	1-541-163-00	MOTOR
M300	1-541-163-00	MOTOR
M400	1-541-163-00	MOTOR
M110	1-541-766-11	MOTOR, DC
M210	1-541-766-11	MOTOR, DC
M310	1-541-766-11	MOTOR, DC
M410	1-541-766-11	MOTOR, DC
	1-558-070-11	LEAD (WITH CONNECTOR) 6P
	1-558-071-11	LEAD (WITH CONNECTOR) 8P

SY-3 (S) BOARD

Ref.No.	Part No.	Description			
521	*A-2019-227-A	MOUNTED PCB, SY-3 (S)			
C1	1-126-256-11	ELECT	4700MF	20%	35V
C2	1-126-256-11	ELECT	4700MF	20%	35V
C3	1-126-256-11	ELECT	4700MF	20%	35V
C4	1-124-360-00	ELECT	1000MF	20%	16V
C5	1-124-618-11	ELECT	2200MF	20%	35V
C6	1-124-618-11	ELECT	2200MF	20%	35V
C7	1-124-618-11	ELECT	2200MF	20%	35V
C8	1-124-477-11	ELECT	47MF	20%	16V
C9	1-124-477-11	ELECT	47MF	20%	16V
C10	1-124-477-11	ELECT	47MF	20%	16V
C11	1-124-477-11	ELECT	47MF	20%	16V
C12	1-124-477-11	ELECT	47MF	20%	16V
C13	1-161-057-00	CERAMIC	0.033MF	10%	50V
C14	1-102-962-00	CERAMIC	30PF	5%	50V
C15	1-102-962-00	CERAMIC	30PF	5%	50V
C16	1-124-477-11	ELECT	47MF	20%	16V
C17	1-124-477-11	ELECT	47MF	20%	16V
C18	1-124-477-11	ELECT	47MF	20%	16V
C19	1-124-477-11	ELECT	47MF	20%	16V
C20	1-124-477-11	ELECT	47MF	20%	16V
C21	1-161-057-00	CERAMIC	0.033MF	10%	50V
C22	1-124-618-11	ELECT	2200MF	20%	35V
C23	1-130-487-00	MYLAR	0.022MF	5%	50V
C41	1-130-495-00	MYLAR	0.1MF	5%	50V
C42	1-130-495-00	MYLAR	0.1MF	5%	50V
C51	1-124-618-11	ELECT	2200MF	20%	35V
C52	1-124-360-00	ELECT	1000MF	20%	16V
C61	1-130-495-11	MYLAR (SERIAL NO. 20101 HIGHTER)	0.1MF	5%	50V
C62	1-130-495-11	MYLAR (SERIAL NO. 20101 HIGHTER)	0.1MF	5%	50V
C101	1-130-487-00	MYLAR	0.022MF	5%	50V
C102	1-130-487-00	MYLAR	0.022MF	5%	50V
C103	1-124-471-00	ELECT	1000MF	20%	6.3V
C201	1-130-487-00	MYLAR	0.022MF	5%	50V
C202	1-130-487-00	MYLAR	0.022MF	5%	50V
C203	1-124-471-00	ELECT	1000MF	20%	6.3V
C301	1-130-487-00	MYLAR	0.022MF	5%	50V
C302	1-130-487-00	MYLAR	0.022MF	5%	50V
C303	1-124-471-00	ELECT	1000MF	20%	6.3V
C401	1-130-487-00	MYLAR	0.022MF	5%	50V
C402	1-130-487-00	MYLAR	0.022MF	5%	50V
C403	1-124-471-00	ELECT	1000MF	20%	6.3V
CF1	1-567-875-11	VIBRATOR, CERAMIC			
CN1	*1-564-242-00	PIN, CONNECTOR 5P			
CN2	*1-508-736-00	PIN, CONNECTOR 10P			
CN4	1-564-320-00	PIN, CONNECTOR 2P			
CN6	*1-560-470-00	PIN, CONNECTOR 8P			
CN101	*1-560-469-00	PIN, CONNECTOR 6P			
CN201	*1-560-469-00	PIN, CONNECTOR 6P			
CN301	*1-560-469-00	PIN, CONNECTOR 6P			
CN401	*1-560-469-00	PIN, CONNECTOR 6P			
CN602	*1-560-456-00	PIN, CONNECTOR 2P			
D1	8-719-505-60	DIODE S5VB20			
D2	8-719-505-60	DIODE S5VB20			
D3	8-719-200-81	DIODE 11ES1			
D4	8-719-200-81	DIODE 11ES1			
D5	8-719-911-19	DIODE 1SS119			

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts wihe part numbers (△-△△△-△△△-XX or △-△△△-△△△-X) may be different from those used in the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

- SEMICONDUCTORS
  In each case, U : μ, for example :
  UA ··· : μA···, UPA··· : μPA···,
  UPC··· : μPC···, UPD··· : μPD···
- RESISTORS
  - ALL resistors are in ohms.
  - F : nonflammable
- CAPACITORS
  MF : μF, PF : μμF

The components identified by shading and mark are critical for safety. Replace only with part number specified.

Ref.No.	Part No.	Description
D6	8-719-911-19	DIODE 1SS119
D7	8-719-200-81	DIODE 11ES1
D101	8-719-200-81	DIODE 11ES1
D102	8-719-911-19	DIODE 1SS119
D103	8-719-911-19	DIODE 1SS119
D104	8-719-911-19	DIODE 1SS119
D201	8-719-200-81	DIODE 11ES1
D202	8-719-911-19	DIODE 1SS119
D203	8-719-911-19	DIODE 1SS119
D204	8-719-911-19	DIODE 1SS119
D301	8-719-200-81	DIODE 11ES1
D302	8-719-911-19	DIODE 1SS119
D303	8-719-911-19	DIODE 1SS119
D304	8-719-911-19	DIODE 1SS119
D401	8-719-200-81	DIODE 11ES1
D402	8-719-911-19	DIODE 1SS119
D403	8-719-911-19	DIODE 1SS119
D404	8-719-911-19	DIODE 1SS119
D601	8-719-911-19	DIODE 1SS119
D602	8-719-911-19	DIODE 1SS119
IC5	8-759-913-42	IC PST520C-2
IC6	8-759-635-02	IC M50747-C42SP
IC8	8-759-982-05	IC RC7805FA
IC101	8-759-984-03	IC LM339N
IC201	8-759-984-03	IC LM339N
IC301	8-759-984-03	IC LM339N
IC401	8-759-984-03	IC LM339N
[illegible]	[illegible]	[illegible]
Q1	8-729-900-80	TRANSISTOR DTC114ES
Q2	8-729-199-82	TRANSISTOR 2SD998-M
Q4	8-729-900-80	TRANSISTOR DTC114ES
Q5	8-729-900-80	TRANSISTOR DTC114ES
Q6	8-729-900-80	TRANSISTOR DTC114ES
Q102	8-729-119-76	TRANSISTOR 2SB733-3
Q103	8-729-900-61	TRANSISTOR DTA114ES
Q104	8-729-900-61	TRANSISTOR DTA114ES
Q112	8-729-119-76	TRANSISTOR 2SB733-3
Q113	8-729-900-61	TRANSISTOR DTA114ES
Q114	8-729-900-61	TRANSISTOR DTA114ES
Q121	8-729-900-61	TRANSISTOR DTA114ES
Q122	8-729-140-96	TRANSISTOR 2SD774-34
Q123	8-729-821-04	TRANSISTOR 2SA1317-STU
Q202	8-729-119-76	TRANSISTOR 2SB733-3
Q203	8-729-900-61	TRANSISTOR DTA114ES
Q204	8-729-900-61	TRANSISTOR DTA114ES
Q212	8-729-119-76	TRANSISTOR 2SB733-3
Q213	8-729-900-61	TRANSISTOR DTA114ES
Q214	8-729-900-61	TRANSISTOR DTA114ES
Q221	8-729-900-61	TRANSISTOR DTA114ES
Q222	8-729-140-96	TRANSISTOR 2SD774-34
Q223	8-729-821-04	TRANSISTOR 2SA1317-STU
Q302	8-729-119-76	TRANSISTOR 2SB733-3
Q303	8-729-900-61	TRANSISTOR DTA114ES

Ref.No.	Part No.	Description
Q304	8-729-900-61	TRANSISTOR DTA114ES
Q312	8-729-119-76	TRANSISTOR 2SB733-3
Q313	8-729-900-61	TRANSISTOR DTA114ES
Q314	8-729-900-61	TRANSISTOR DTA114ES
Q321	8-729-900-61	TRANSISTOR DTA114ES
Q322	8-729-140-96	TRANSISTOR 2SD774-34
Q323	8-729-821-04	TRANSISTOR 2SA1317-STU
Q402	8-729-119-76	TRANSISTOR 2SB733-3
Q403	8-729-900-61	TRANSISTOR DTA114ES
Q404	8-729-900-61	TRANSISTOR DTA114ES
Q412	8-729-119-76	TRANSISTOR 2SB733-3
Q413	8-729-900-61	TRANSISTOR DTA114ES
Q414	8-729-900-61	TRANSISTOR DTA114ES
Q421	8-729-900-61	TRANSISTOR DTA114ES
Q422	8-729-140-96	TRANSISTOR 2SD774-34
Q423	8-729-821-04	TRANSISTOR 2SA1317-STU
Q601	8-729-900-61	TRANSISTOR DTA114ES
Q602	8-729-900-80	TRANSISTOR DTC114ES
Q603	8-729-900-80	TRANSISTOR DTC114ES
Q604	8-729-900-80	TRANSISTOR DTC114ES
Q605	8-729-900-80	TRANSISTOR DTC114ES
Q606	8-729-900-80	TRANSISTOR DTC114ES
R1	1-249-441-11	CARBON 100K 5% 1/4W
R2	1-249-416-11	CARBON 820 5% 1/4W
R3	1-249-416-11	CARBON 820 5% 1/4W
R4	1-249-441-11	CARBON 100K 5% 1/4W
R5	1-249-429-11	CARBON 10K 5% 1/4W
R6	1-249-401-11	CARBON 47 5% 1/4W
R7	1-247-903-00	CARBON 1M 5% 1/4W
R8	1-249-429-11	CARBON 10K 5% 1/4W
R17	1-249-416-11	CARBON 820 5% 1/4W
R18	1-249-416-11	CARBON 820 5% 1/4W
R19	1-249-416-11	CARBON 820 5% 1/4W
R22	1-249-441-11	CARBON 100K 5% 1/4W
R102	1-249-417-11	CARBON 1K 5% 1/4W
R104	1-249-429-11	CARBON 10K 5% 1/4W
R105	1-249-396-11	CARBON 18 5% 1/4W
R112	1-249-417-11	CARBON 1K 5% 1/4W
R114	1-249-429-11	CARBON 10K 5% 1/4W
R115	1-249-416-11	CARBON 820 5% 1/4W
R116	1-249-429-11	CARBON 10K 5% 1/4W
R117	1-249-401-11	CARBON 47 5% 1/4W
R122	1-249-425-11	CARBON 4.7K 5% 1/4W
R202	1-249-417-11	CARBON 1K 5% 1/4W
R204	1-249-429-11	CARBON 10K 5% 1/4W
R205	1-249-396-11	CARBON 18 5% 1/4W
R212	1-249-417-11	CARBON 1K 5% 1/4W
R214	1-249-429-11	CARBON 10K 5% 1/4W
R215	1-249-416-11	CARBON 820 5% 1/4W
R216	1-249-429-11	CARBON 10K 5% 1/4W
R217	1-249-401-11	CARBON 47 5% 1/4W
R222	1-249-425-11	CARBON 4.7K 5% 1/4W

Ref.No.	Part No.	Description			
R302	1-249-417-11	CARBON	1K	5%	1/4W
R304	1-249-429-11	CARBON	10K	5%	1/4W
R305	1-249-396-11	CARBON	18	5%	1/4W
R312	1-249-417-11	CARBON	1K	5%	1/4W
R314	1-249-429-11	CARBON	10K	5%	1/4W
R315	1-249-416-11	CARBON	820	5%	1/4W
R316	1-249-429-11	CARBON	10K	5%	1/4W
R317	1-249-401-11	CARBON	47	5%	1/4W
R322	1-249-425-11	CARBON	4.7K	5%	1/4W
R402	1-249-417-11	CARBON	1K	5%	1/4W
R404	1-249-429-11	CARBON	10K	5%	1/4W
R405	1-249-396-11	CARBON	18	5%	1/4W
R412	1-249-417-11	CARBON	1K	5%	1/4W
R414	1-249-429-11	CARBON	10K	5%	1/4W
R415	1-249-416-11	CARBON	820	5%	1/4W
R416	1-249-429-11	CARBON	10K	5%	1/4W
R417	1-249-401-11	CARBON	47	5%	1/4W
R422	1-249-425-11	CARBON	4.7K	5%	1/4W
R601	1-249-413-11	CARBON	470	5%	1/4W
R606	1-249-429-11	CARBON	10K	5%	1/4W
R607	1-249-429-11	CARBON	10K	5%	1/4W
R608	1-249-429-11	CARBON	10K	5%	1/4W
R609	1-249-416-11	CARBON	820	5%	1/4W
R610	1-249-416-11	CARBON	820	5%	1/4W
RB1	1-235-195-00	RESISTOR BLOCK	10Kx8		
RB2	1-235-195-00	RESISTOR BLOCK	10Kx8		
RB3	1-231-533-00	RESISTOR BLOCK	10Kx4		
RB601	1-231-533-00	RESISTOR BLOCK	10Kx4		
S601	1-572-362-11	SWITCH, PUSH			
S602	1-572-362-11	SWITCH, PUSH			
S603	1-572-362-11	SWITCH, PUSH			
S604	1-572-362-11	SWITCH, PUSH			

Ref.No.	Part No.	Description
	SW-7 (S) BOARD	
161	*1-634-859-11	PC BOARD, SW-7
CN1	*1-560-461-00	PIN, CONNECTGR 5P
D1	8-719-311-21	DIODE SEL1121R
D2	8-719-311-21	DIODE SEL1121R
D3	8-719-311-21	DIODE SEL1121R
D4	8-719-311-21	DIODE SEL1121R
	CN-14 (S) BOARD	
171	*1-634-869-11	PC BOARD, CN-14
CN6	1-562-090-00	JACK 13P
CN601	1-562-090-00	JACK 13P
	LED-5 BOARD	
551	*A-2095-652-A	MOUNTED PCB, LED-5
D1	8-719-313-21	DIODE SEL1321G
501	AU-4 BOARD	(SAME AS CCP-1300)
531	EX-4 BOARD	(SAME AS CCP-1300)
151	AC-3 BOARD	(SAME AS CCP-1300)